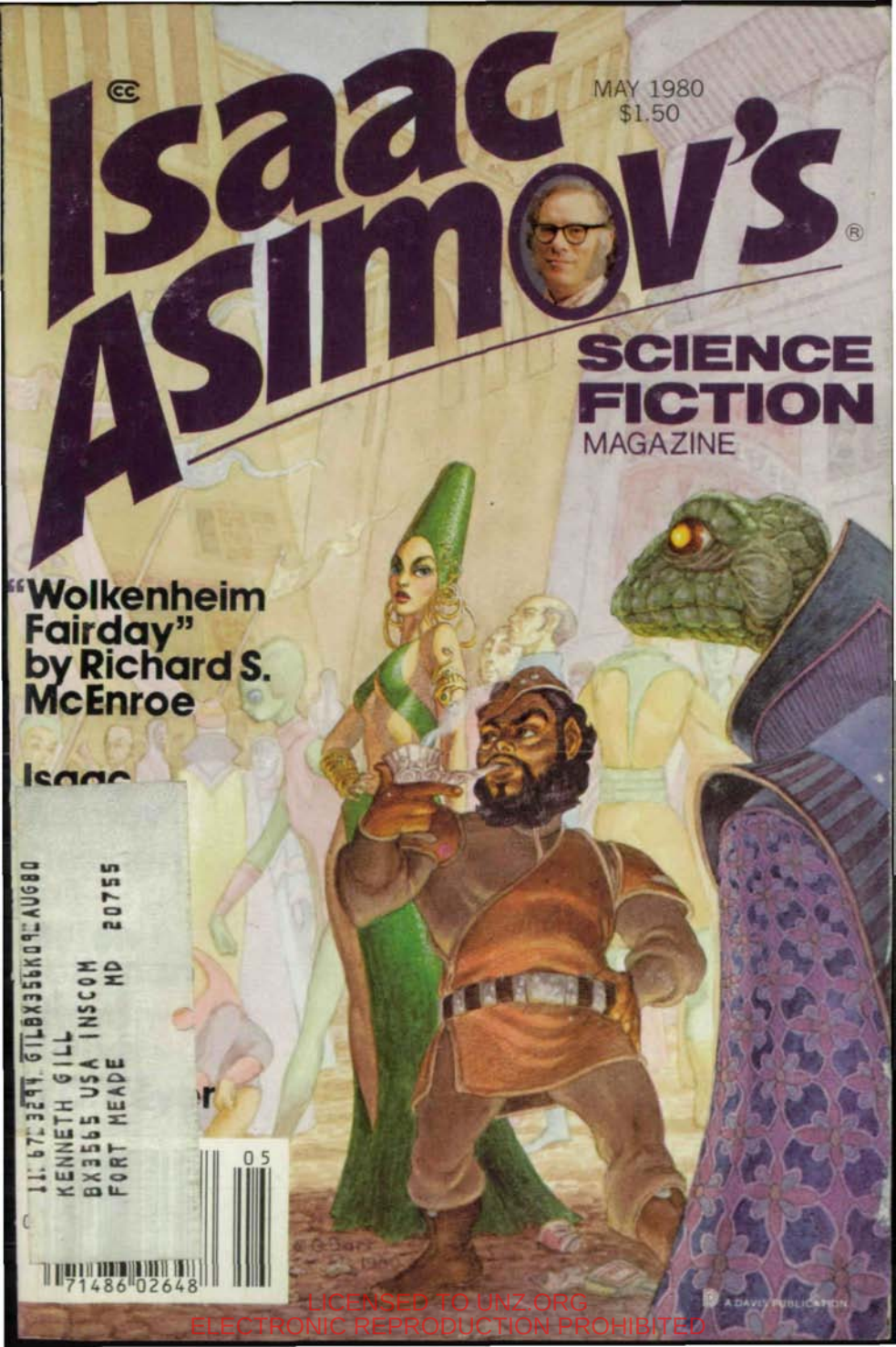

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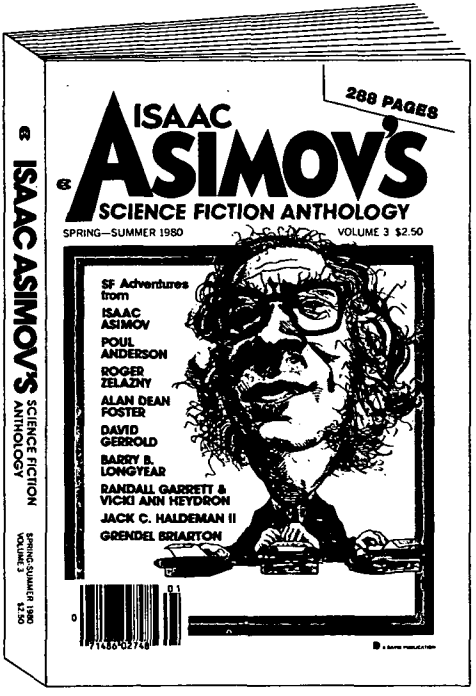

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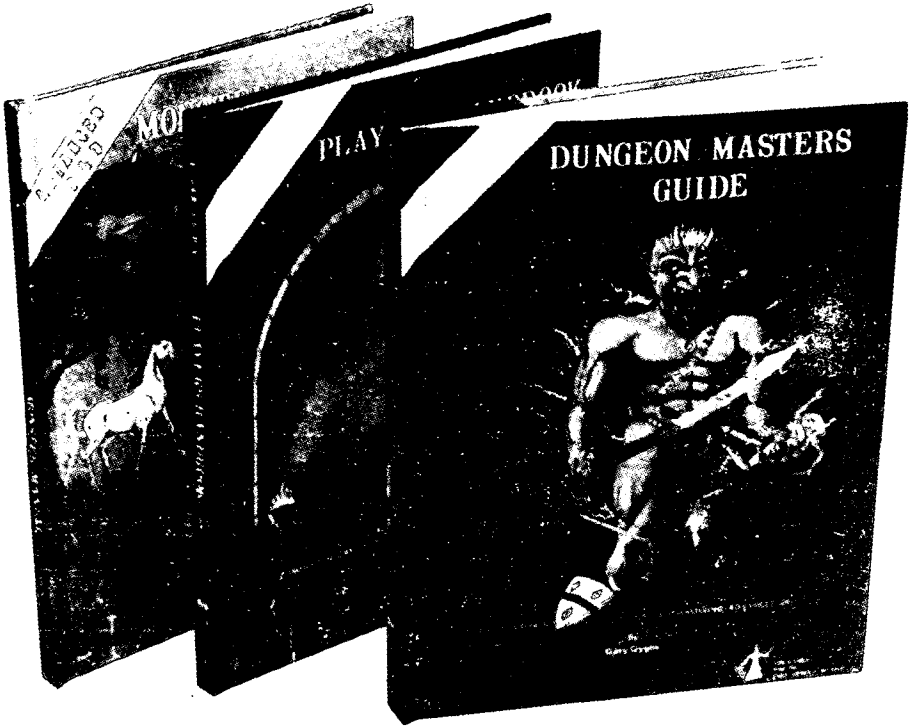

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Next issue on sale
22 May 1980

POSTMASTER:
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Box 7350, Greenwich, CT 06830

ISSN 0162-2188
Vol. 4, No. 5 (whole no. 27) May 1980

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Published monthly by Davis Publications, Inc., at $1.50 a copy; annual subscription of twelve issues $15.00 in the United States and U.S. possessions; in all other countries $17.00. Address for subscriptions and all correspondence about them: Box 7350, Greenwich, CT 06830. Address for all editorial matters: Box 13116, Philadelphia, PA 19101. Isaac Asimov's Science Fiction Magazine® is the registered trademark of Davis Publications, Inc. © 1980 by Davis Publications, Inc., 380 Lexington Ave., New York, NY 10017. All rights reserved, printed in the U.S.A. Protection secured under the Universal and Pan American Copyright Conventions. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All submissions must include a self-addressed, stamped envelope; the publisher assumes no responsibility for unsolicited manuscripts. Application to mail at controlled circulation rates is pending at Dallas, PA.

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EDITORIAL: THE LETTER COLUMN

by Isaac Asimov

art: Frank Kelly Freas

One of the problems that faces a science fiction magazine is the letter column. Should there be one? Should there not be one? If there is one, what kind should it be?

Those are not easy questions to answer, and I was the one who had to supply those answers. It's George, with the able assistance of the beauteous red-haired Shawna, who edits the magazine; but it's I who am supposed to set the tone, and the letter column is part of the tone.

The letter column became part of the science fiction phenomenon in the very first science fiction magazine, *Amazing Stories,* and it sprang to life at the behest of the very first science fiction editor, Hugo Gernsback.

He had some arcane financial reason for starting a letter column, but it got away from him almost at once. It turned out that science fiction fans were garrulous, articulate, and incredibly hungry both for exposure and for communication with each other. The department grew enormously popular, and nobody ever dreamed of saying, "If you cut out the letters, you'll have room to give us more stories."

People *wanted* to read the letters. The constant letter writers became friends with each other and out of that burgeoned the fan movement—fan clubs, fan magazines, and fan conventions. And, of course, some of the constant letter writers rose to become constant story writers; I among them.

But everything changes, even letter columns. If one isn't careful, a letter column tends to gain a juvenile touch. There is nothing like the intensity with which a young teenager can love science fiction; and if he is a bright and articulate young teenager (and what other kind would love science fiction?) he will turn out novelettes of golly-gee-whiz enthusiasm filling quires of paper—and often get printed.

Some editors could not resist playing up to this segment; and in *Thrilling Wonder Stories* there was, for a while, "Sergeant Saturn" answering the letters with a kind of phony sub-juvenile joviality.

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Jack Williamson,
President of The Science Fiction Writers of America

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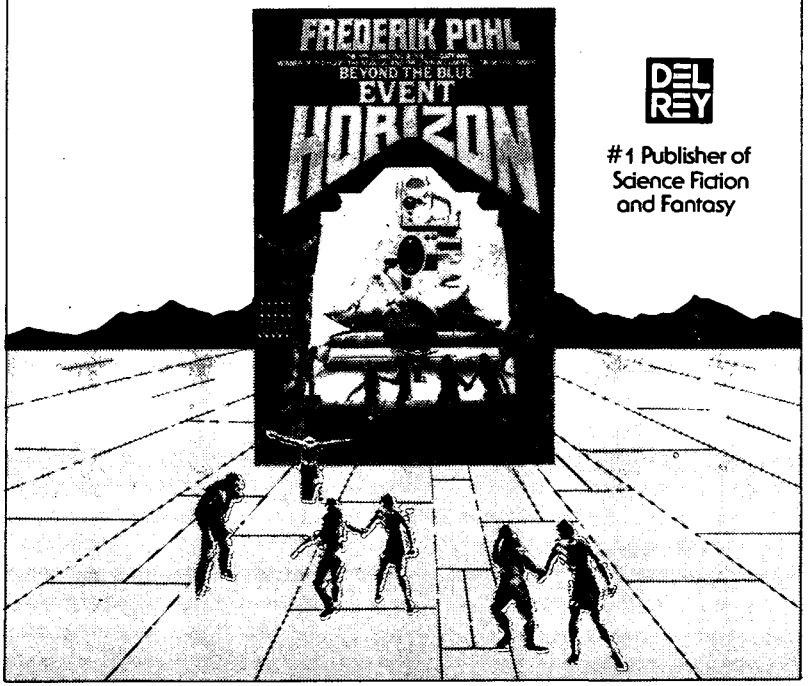

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On the other hand, to those who wanted, above all else, for science fiction to be adult and respectable, such juvenility was anathema. To the more sensitive, any fan letter that discussed the stories or the magazine was juvenile by that very fact. *Astounding Science Fiction* therefore decided to turn the letter column into total edification. Readers were to concentrate only on the scientific points within the stories. The title of the letter column was at one time changed from "Brass Tacks" to "Science Discussions."

Both changes, of course, represented (in my opinion) an unacceptable extreme. Sergeant Saturn's silly clowning embarrassed everyone over the mental age of eight. On the other hand, the dull pontifications of "Science Discussions" were thoroughly opaque.

It was not surprising, then, that when *Fantasy and Science Fiction* began publication in 1949, and aimed at neither children nor engineers, they simply omitted a letter column.

The next year when Horace Gold was founding *Galaxy,* he sent out queries to groups of science fiction readers as to what they would or would not like to see in his magazine. He was utterly astonished to discover that, by a healthy majority, they wanted no letter column at all.

You can see the reason. If one must choose among childishness, boredom, and nothing—it will be nothing that will be chosen.

The two extremes, however, are not the only choices. Have we forgotten the middle ground?

So I decided on a letter column in the middle ground; and, thank goodness, George agreed with me. It was going to be my kind of letter column, and I was to choose the letters to be published.

Here's the way it's done. George, Shawna, and Joel look through the letters first; but then they send the whole thing to me, leaving out nothing. I am bombarded by endless masses of manila envelopes crammed with letters. (Yes, it does make a dent in my tight schedule; and no, I am not overjoyed—but it must be done.)

I read every one of them, and I pick out just about twice as many letters for publication as we can possibly have room to print. I then append to each a one-liner which I try to make light, fluffy, and (I earnestly hope) witty. George then makes the final selection on the basis of the exact amount of space available in a given issue.

Now the question arises (I can hear you out there): Which letters do I choose for publication?

First—They have to be reasonably easy to read. I don't want to seem ungracious, but I can't possibly spend time poring over a letter in order to make out dim pencil marks or chicken-track handwriting.

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Even typing isn't a dream of happiness if it is with an old ribbon, or clogged keys, or is heavily x'd. Aside from its being difficult for me to read, I wouldn't dare send it to the typesetter, who is a hard-working fellow with troubles of his own. So please, if you would like to make the letter column, neat typing would help.

Second—They have to make some interesting point or other. I know it's annoying to have the address sticker obscure the cover, and we grovel with embarrassment over it; but it would be dull to publish the fifth letter on the same subject, let alone the twenty-eighth. For that matter, if a hundred of you write to praise a particularly praiseworthy story, we can no longer print any more once we have inserted two or three. Even too much praise sickens (everyone but the author, that is).

Third—We are not any more anxious to publish a badly-written letter than a badly-written story. And we do love a clever letter as long as it isn't too clever by half. Where's the dividing line? You don't have to worry about that. *We'll* decide.

Fourth—It's obvious we can't print long letters. Two or three paragraphs are plenty. If your letter is longer, but contains good material, we're apt to print excerpts rather than the whole thing.

Fifth—I like a letter that gives me a chance to say something lightly humorous in return. The editorial reply, in fact, is an important part of the letter. They lend the tone, and "lightly humorous" is the tone I want and strive for.

Now then, are we accomplishing what we have set out to do? *I* think so, but how can I be sure? As everyone knows, I'm full of cheerful self-appreciation and like everything I do. That doesn't mean other people are pleased.

For instance, some of our correspondents complain that the letter column is self-serving, that we print too many letters that praise us and apparently dump those that call us bad names.

Actually, that's not so. Candor forces me to admit that we like praise better than blame (who doesn't?) but we make a definite effort to include carpings and criticisms. This is not because we are masochists or superhumanly full of integrity—but because it lends variety to the column and makes it interesting to the reader, and interest is the name of the game.

The trouble is, in all honesty, that we *do* get far more letters praising us than blaming us. And if that's the way it must be, let it be so. I don't want any of you writing letters of blame that you're not really sincere about just because you want to redress the balance.

Then, too, there are occasional remarks to the effect that my

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replies are too flip and, on at least one occasion, that they were insulting. Naturally, I don't intend to be insulting; and George (who has a marvelous sense of equanimity) rides herd on me to make sure I don't get overenthusiastic. But—humor is tricky.

One last thing—every once in a while someone writes a letter to *IA'sfm* that is clearly addressed to me as an individual—that talks about me as a writer, or discusses stories of mine that appeared in other magazines, or asks personal questions. Such letters cannot, of course, appear in the letter column; but, when I can, I answer them personally.

I say "when I can" because times have changed. For many years, I took pride in answering every single fan letter I received, even if only with a brief postcard. But, alas, my mail seems to get ever heavier and my writing and lecturing schedule ever tighter. It is no longer possible to answer every letter and for that I apologize to all of you.

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ON BOOKS: The Best of 1979
by Charles N. Brown

Charles N. Brown, editor of Locus, *the newspaper of the science fiction field ($12.00 for 12 issues, PO Box 3938, San Francisco CA 94119), has kindly consented to give Mr. Searles a chance to recover from the rush of the holiday book-buying season. (What holiday? you might ask. This is May, you might say. Well, such are the vagaries of the publishing world. Merry Christmas.)*

As I write this, 1979 has just ended. Twelve hundred and ninety one science fiction books were published during the year—an average of more than one hundred per month. Of these, six hundred and eighty nine were books appearing for the first time. The rest were reprints or reissues. Obviously, no review column could even mention, let alone review, more than a fraction of these. By using Sturgeon's Law—90% of everything is crud—I've picked what I think are the sixty-nine top titles of the year for recommendation. Since novels get the most attention during the year, we'll start out with the other categories.

Best Collections 1979

The Best of James Blish edited by Robert A. W. Lowndes (Ballantine/Del Rey, 358pp, $1.95, paper)

Riverworld and Other Stories by Philip José Farmer (Berkley, 264pp, $2.25, paper)

Ship of Shadows by Fritz Leiber (Gollancz, 253pp, £6.95)

The Change War by Fritz Leiber (Gregg, 189pp, $15.00)

Fireflood and Other Stories by Vonda N. McIntyre (Houghton-Mifflin, 281pp, $10.95)

The Science Fiction Stories of Walter M. Miller, Jr. (Gregg, 373pp, $15.00)

Convergent Series by Larry Niven (Ballantine/Del Rey, 227pp, $1.95, paper)

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The Star-Spangled Future by Norman Spinrad (Ace, 401pp, $2.25, paper)
The Stars are the Styx by Theodore Sturgeon (Dell, 382pp, $2.25, paper)
Eyes of Amber and Other Stories by Joan D. Vinge (NAL/Signet, 248pp, $1.95, paper)

There were sixty-one collections published last year, and at least twenty of them were better than average. Although most readers prefer longer works, the shorter length is usually better for science fiction. Ideas can be developed without the depth of characterization needed (and generally lacking in science fiction) for a novel.

§James Blish, in the five years since his death, has become an unfairly neglected author. He deserves continued exposure and this new survey collection, *The Best of James Blish,* may help. There is an excellent personal introduction by Robert A. W. Lowndes §*The Change War* collects all of Fritz Leiber's excellent time travel series with the exception of the award-winning novel, *The Big Time,* which is in *Ship of Shadows,* a collection of all Leiber's award-winning stories with the exception of the long novel, *The Wanderer. The Change War* has a fine introduction by John Silbersack. §Norman Spinrad's short stories about a future America, some of his best work, are collected in *The Star-Spangled Future.* §Joan D. Vinge and Vonda N. McIntyre, two of today's leading writers, have finally published their first collections. Both are excellent.

Best Anthologies 1979

The Year's Finest Fantasy, Volume 2, edited by Terry Carr (Berkley/Putnam, 277pp, $12.50)
The Best Science Fiction Novellas of the Year #1 edited by Terry Carr (Ballantine/Del Rey, 328pp, $2.25, paper)
The Best Science Fiction of the Year #8 edited by Terry Carr (Ballantine/Del Rey, 372pp, $2.25, paper)
Universe 9 edited by Terry Carr (Doubleday, 182pp, $7.95)
Best Science Fiction Stories of the Year: Eighth Annual Collection edited by Gardner Dozois (Dutton, 234pp, $9.95)
The Road to Science Fiction #2: From Wells to Heinlein edited by James Gunn (NAL/Mentor, 535pp, $2.50, paper)
The Road to Science Fiction #3: From Heinlein to Here edited by James Gunn (NAL/Mentor, 656pp, $2.75, paper)

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Rooms of Paradise edited by Lee Harding (St. Martin's, 182pp, $8.95)
The Edge of Space edited by Robert Silverberg (Elsevier/Nelson, 224pp, $8.95)
The 1979 Annual World's Best SF edited by Donald A. Wollheim (DAW, 268pp, $2.25, paper)

There were seventy-one anthologies published during 1979, equally split between those with reprinted material and those with original work. The various Year's Bests listed above are, as usual, highly recommended. The Dozois volume was particularly fine last year. §I'm a sucker for fat survey–type anthologies with long historical introductions and biographical material. The Gunn volumes, part of a chronological history of science fiction, push all my buttons. §The other three books are original anthologies. Carr has five outstanding stories, including Varley's "Options" which will probably win a Nebula or Hugo. §Silverberg gives us three good novellas by Chang, Gotlieb, and McGarry—certainly not household names in science fiction—yet. §*Rooms of Paradise* is the best all-around original anthology of the year with excellent material by Aldiss, Wolfe, Watson, Bishop, and others.

Best Art Books 1979

Barlowe's Guide to Extraterrestrials by Wayne D. Barlowe and Ian Summers (Workman, 144pp, $14.95, hardcover; $7.95, paper)
More Fantasy by Fabian edited by Gerry de la Ree (de la Ree, 128pp, $15.75)
21st Century Foss by Chris Foss (Dragon's Dream, 144pp, $10.95, paper)
H. R. Giger's Necronomicon (Big O, 84 pp, $14.95, paper)
The Art of the Brothers Hildebrandt edited by Ian Summers (Ballantine, unpaged, $15.00, hardcover; $8.95, paper)
Cat People and Other Inhabitants of the Outer Regions by Karen Kuykendall (Desert Diamond, unpaged, $9.95, paper)
Wonderworks by Michael Whelan, edited by Polly and Kelly Freas (Starblaze, 119pp, $24.95, hardcover; $7.95, paper)

Five years ago, the number of science fiction art books published could be counted on the fingers of one hand. Times have changed. Last year, nearly thirty art books were published. This does not include illustrated novels or the new hybrid of novellas or short

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novels with fifty or more illustrations.

§Michael Whelan became an overnight sensation with his first cover assignments in 1974. It's easy to see why in this first collection of his work. §Barlowe's brightly-colored field guide to classic science fiction aliens was very popular as a gift last holiday season. §Steve Fabian's updates of the 1940's pulp–style illustrations show him to be the logical successor to Virgil Finlay and Hannes Bok. §In the past few years, architect-turned-artist Chris Foss has revolutionized the look of the spaceship in science fiction art. This book also includes his realistic views of military hardware such as ships and airplanes. §H. R. Giger is probably the ultimate horror artist of our time. This book is fascinating for those who can stand to look at it. §The first half of the Hildebrandt collection is their cloying fantasy illustrations for *The Lord of the Rings* and *The Sword of Shannara.* The second half, which includes their parodies of famous paintings, is hilarious and artistically satisfying. §Karen Kuykendall, working in the style of Kay Nielsen, has produced some striking paintings in this privately printed book.

Best Reference Books 1979

Survey of Science Fiction Literature edited by Frank N. Magill (Salem Press, 2542pp, 5 volumes, $200.00)

The Science Fiction Encyclopedia edited by Peter Nicholls (Doubleday/Dolphin, 672 pp, $24.95, hardcover; $12.95, paper)

Science Fiction and Fantasy Literature compiled by R. Reginald (Gale Research, 1141pp, 2 volumes, $64.00)

Fantasy Literature edited by Marshall Tymn, Kenneth J. Zahorski, and Robert H. Boyer (R. R. Bowker, 273pp, $14.95)

Of the thirty-six reference books published last year, I can only recommend four, three of those with reservations. §Magill's massive *Survey of Science Fiction Literature* contains five hundred 2,000-word academic essays on famous science fiction works. Some are excellent, some are good, and some are awful, and the only way to find out which are which is to read them all. For some unfathomable reason the articles are alphabetically arranged by title instead of, more logically, by author. Nor is there any index of who wrote each essay. §Volume I of the Reginald checklist supersedes Bleiler's *Checklist of Fantastic Literature.* It attempts to list every science fiction and fantasy book (over 15,000 titles) published from 1700 to

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1974. Volume 2, subtitled *Contemporary Science Fiction Authors II,* gives biographical information on nearly fifteen hundred science fiction writers from the modern period. The layout and type style (the book is not typeset) make it a chore to use. §*The Science Fiction Encyclopedia* is the first true encyclopedia of the science fiction field. If your science fiction reference shelf is limited to one book, this should be it.

Related Non-Fiction Books 1979

In Memory Yet Green by Isaac Asimov (Doubleday, 732pp, $15.95)
The World of Science Fiction 1926-1976 by Lester del Rey (Garland, 416pp, $15.00, hardcover; Ballantine/Del Rey, 432pp, $5.95, paper)
The 80s: A Look Back at the Tumultuous Decade 1980-1989 edited by Tony Hendra, Christopher Cerf, and Peter Elbling (Workman, 264pp, $14.95, hardcover; $6.95, paper)
The Language of the Night by Ursula K. Le Guin, edited by Susan Wood (Putnam, 270pp, $9.95)
Wasn't the Future Wonderful? by Tim Onosko (Dutton, 188pp, $9.95, paper)

§Two very different views of the future are presented by Tim Onosko and Tony Hendra et al. *Wasn't the Future Wonderful?,* a compilation of predictions from the 1930's, is gadget-oriented and optimistic, while *The 80s: A Look Back at the Tumultuous Decade 1980-1989* is a sarcastic, tongue-in-cheek social commentary on today's world. §The first half of Isaac Asimov's autobiography covers up to 1954 (the second half will be published by Doubleday in February 1980). Asimov's ability to make the dullest details of his life interesting to a general reader is his genius. §Del Rey's genius is his ability to create a fascinating personal history of science fiction which probably has something in it to infuriate everybody. §*The Language of the Night,* a collection of critical essays, is academic, perceptive, but still accessible to the general reader.

Best Novels 1979

The Merman's Children by Poul Anderson (Berkley/Putnam, 319pp, $11.95)

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Catacomb Years by Michael Bishop (Berkley/Putnam, 384pp, $10.95)
Kinsman by Ben Bova (Quantum/Dial, 280pp, $9.95)
Kindred by Octavia Butler (Doubleday, 264pp, $8.95)
The Fountains of Paradise by Arthur C. Clarke (Harcourt, Brace, Jovanovich, 261pp, $10.00, hardcover; Ballantine/Del Rey, 305pp, $2.50, paper)
The Road to Corlay by Richard Cowper (Pocket, 239pp, $1.95, paper)
Tales of Nevérÿon by Samuel R. Delany (Bantam, 264pp, $2.25, paper)
SS-GB by Len Deighton (Knopf, 344pp, $9.95)
On Wings of Song by Thomas M. Disch (St. Martin's, 359pp, $10.95)
The Dead Zone by Stephen King (Viking, 426pp, $11.95)
Death's Master by Tanith Lee (DAW, 348pp, $1.95, paper)
Watchtower by Elizabeth A. Lynn (Berkley/Putnam, 251pp, $9.95)
The Dancers of Arun by Elizabeth A. Lynn (Berkley/Putnam, 263pp, $10.95)
Harpist in the Wind by Patricia A. McKillip (Atheneum, 256pp, $8.95)
Mayflies by Kevin O'Donnell, (Berkley, 295pp, $1.95, paper)
Jem by Frederik Pohl (St. Martin's, 359pp, $10.00)
The Web Between the Worlds by Charles Sheffield (Ace, 274pp, $4.95, paper)
The Last Enchantment by Mary Stewart (Morrow, 538pp, $11.95)
The Face by Jack Vance (DAW, 224pp, $1.95, paper)
Titan by John Varley (Berkley/Putnam, 302pp, $9.95)
Heller's Leap by Ian Wallace (DAW, 317pp, $2.25, paper)
Juniper Time by Kate Wilhelm (Harper & Row, 280pp, $10.95)
The Palace by Chelsea Quinn Yarbro (St. Martin's, 384pp, $9.95)

Over four hundred original novels were published last year. According to Sturgeon's Law, forty of them should have been readable, but I had trouble finding even twenty-three.

The twenty-three books listed show the astonishing range of modern science fiction and fantasy. There is high adventure (Varley, Lynn, Vance, and Anderson); excellent characterization (Disch and Wilhelm); hard near-future technology (Clarke, Sheffield, and Bova); high fantasy (McKillip and Stewart); horror (King); interstellar adventure (O'Donnell); historical fantasy (Stewart, Butler, and Yarbro); etc.

The five I would nominate for awards? §Len Deighton's tale of an alternate world where Germany won the Second World War was published as a straight thriller instead of as science fiction. I hope

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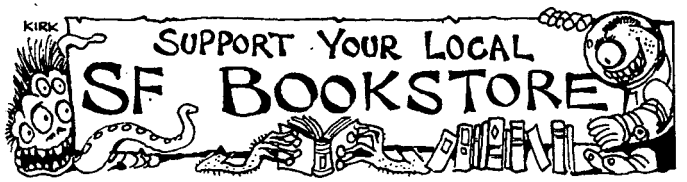
no science fiction reader skips it because of this. §*Catacomb Years,* Bishop's fragmented tale of a future domed Atlanta, contains some of his best writing. §Frederik Pohl's vision of the future in *Jem* is bleak and depressing, but worth reading. §*The Road to Corlay* is Cowper's finest book. The jacket copy compares it to *A Canticle for Leibowitz,* and it stands up to the comparison. §*Harpist in the Wind,* the final volume in the trilogy which began with *The Riddle Master of Hed,* is easily the best fantasy of the year. I have no doubt the series will be considered a fantasy classic within a decade.

Those of you who counted as you read this will probably notice that I only listed fifty-nine titles. The other ten? That's up to you.



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THE SF CONVENTIONAL CALENDAR
by Erwin S. Strauss

Now's the time to be planning the social con(vention)s you'll be spending this summer with your favorite SF authors, artists, editors, and fellow SF fans. For a longer, later list and a sample of SF folksongs, send me an addressed, stamped envelope (SASE) at: 9850 Fairfax S2. #232, Fairfax VA 22031. Call the Hot Line at (703) 273-6111. If a machine answers, leave your area code and number CLEARLY and I'll call back. When writing cons, enclose an SASE. When calling cons, state your name and reason for calling. There's no charge to list your con here. Look for me as "Filthy Pierre" at cons.

Torque. For info, write: **1812-415 Willowdale Ave., Willowdale, Ont. M2N 5B4.** Or phone: **(416) 221-3517** (10 AM to 10 PM only, not collect). Con will be held in: Toronto, Canada (if location omitted, same as in address) on: 25-27 Apr., 1980. Guests will include: W.A. (Bob) Tucker, Phyllis Gottlieb, Chandler Davis. At the Roehampton Place Hotel.

Kubla Khan, (615) 832-8402. Nashville TN, 2-4 May. Stephen (Salem's Lot) King, Andrew J. Offutt. Your basic Southern con, with 24-hour party room dispensing Southern hospitality.

MarCon, (614) 497-9953. Columbus OH, 2-4 May. L. Sprague & Catherine de Camp, Brian Earl Brown. Your basic Midwestern con, very low-key, where the old-timers meet their friends.

LepreCon, (602) 966-8189. Phoenix AZ, 2-4 May. At the Hyatt ("Fire in the Sky") Regency.

Metz SF Festival, (8) 776-9100, ext. 414. Metz, France, 1-7 May. Robert Silverberg, Joe Haldeman. A week-long festival, sponsored by local, regional, and national governments.

VCon, Box 48701, Bentall Station, Vancouver BC V7X 1A6. (604) 683-4846. 23-25 May. Roger (Amber) Zelazny, Ted (Heavy Metal) White. The theme is "graphic interpretations of SF."

AmberCon, Box 12587, Wichita KS 67209. 6-8 Jun. Fred (JEM) Pohl, Walt (Rosebud) Liebscher, Vincent DiFate, Wilson (Ice and Iron, Year of the Quiet Sun, Wild Talent) A. Tucker.

Ad Astra, 2010-88 Bloor St. E., Toronto, Ont. M4W 3G9. (416) 636-4214. 13-15 Jun. James P. (Inherit the Stars, Genesis Machine) Hogan, Steve Simmons. Masquerade, film contest.

SFRA Con, c/o Hamilton, Wagner College Planetarium, Grimes Hill, Staten Island NY 10301. The SF Research Association annual con for people teaching SF in schools and colleges.

MidSouthCon, c/o Purcell, Route 1, Box 322-A, Leoma TN 38468. Huntsville AL, 20-22 Jun. Fred (Gateway) Pohl, W. A. (Bob) Tucker, Kelly Freas. A 24-hour-party-room Southern con.

MystiCon, Box 12294, Roanoke VA 24024. Blacksburg VA, 4-6 Jul. Gordon A. (Dorsai) Dickson, Nelson Bond. Masquerade. That part of the Appalachians is beautiful that time of year.

WesterCon 33, Box 2009, Van Nuys CA 91404. Los Angeles CA, 4-6 Jul. Roger Zelazny, Bob Vardeman, Frank Denton. The 1980 edition Western con. A good warmup for NorEasCon II.

NorEasCon II, Box 46, MIT PO, Boston MA 02139. 29 Aug.-1 Sep., 1980. Knight, Wilhelm, Pelz, Silverberg. The 1980 WorldCon. Join by July 15 for $30 and save $15. See you there.

WesterCon 34, Box 161719, Sacramento CA 95816. July 4th weekend, 1981.

Devention II, Box 11545, Denver CO 80211. 3-7 Sept., 1981. C. L. Moore, Clifford Simak, R. Hevelin, Ed Bryant. The 1981 WorldCon. It's not too early to start planning vacations.

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WOLKENHEIM FAIRDAY

by Richard S. McEnroe

art: George Barr

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Mr. McEnroe claims to be 23, and an escapee from the hollowed (his spelling) halls of Hofstra University, where he studied film, video, and radio–and flunked Mandarin Chinese. This is his first SF sale.

It was the perfect sort of crowd to be alone and far from home in.

It was Symmetry Fair on Wolkenheim and the great binary worlds Trollshulm and Hansenwald had banished darkness from the night sky. Greedy little cargo lighters and fat intrasystem freighters pierced the sky on lances of rubied light or drifted gently into sheltering cradles on atmospheric drives. Normally staid farm-folk poured into Hansen's Landing from the outlying agrarian districts, shedding drab, practical workclothes for homemade costumes as outlandish and unique as possible. Ragbags and buffoons, jesters and crepe-paper "ladies of fashion," they all thronged the streets for the once-in-a-decade celebration of Symmetry, partying and carousing and gaping at the off-worlders in their midst. There were grim, weathered Trollshulm dragonskinners, the reptilian Jirin Independent Traders, and ascetic Basiri merchants from the Consortium Mercantile, among others.

One other:

It was Symmetry Fair and Óin Ceiragh stumped through the Fair-packed streets, squat and massive, half-drunk and defiantly lonely. An ornate freehand *breda* pipe jutted out of his thick beard, leaving thick clouds of the pungent, narcotic smoke in his wake. He walked with a broad, rolling gait, clenching his three-fingered fists and swinging his thick arms like a seaman from some older and smaller ocean than the one he reluctantly navigated. It was the only way he could walk on this world without bounding into the air at every step.

It had been a singularly unsatisfying shoreleave, in spite of the fact that it was Symmetry Fair and Wolkenheim was supposed to be one of those worlds where *anyone* could have a good time.

Almost anyone. There was celebration and laughter all around, but none for him. It was all for the great swarms of tall, fragile *humans* around him. It was all for these people here on familiar ground, not for some strange, foreign creature like a Galatian Dwarf–like Óin Ceiragh, so many light years, so incredibly *far* from his proper place. Among these frail creatures, born and raised in their feeble Terran-standard gravity, the strength that had been

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his constant and unremarkable companion in the forests and clan-holds of home and his most marketable commodity in the Consortium became a terrible and potent thing, too dangerous to enjoy the random pleasures of inebriated release.

What could he do among these delicate creatures? Could he take part in the great dances that took up whole blocks of the Fair streets? He tried, and his quick, springy movements had looked so incongruous amid their comparatively languid and flabby undulations that whole dances that had been going on, unbroken, for hours had collapsed as the dancers stopped to watch and mock him. Even the street bands faltered and lost their rhythms in their laughter.

Could he drink in the taverns? Seasoned innkeepers would take one look at his man-and-a-half's shoulders and the thick traceries of tendons on his square, heavy hands and sell him anything he wanted, as long as he drank it somewhere *else*.

He couldn't blame them. He remembered the human whore he had visited on leaving the lighter docks. He remembered how skittish she had been around his four hundred pounds' weight. And he remembered the high, thin scream of the house's "badger man," when he tried to backhand the human aside and wound up crushing his hip instead. He remembered the way the bones had felt, splintering under his hand.

That had ended up costing him more than the badger man's rake-off would have come to, but it had been worth it. It had impressed on him the delicacy of these creatures, and it served as a reminder of his ultimate alienness that he could not lose in a chemical fog.

Overhead, if he'd cared to look again, he could have seen a bright pinpoint of light. That was his current home and employer, the star-spanning Consortium City Mercantile *Shtotha,* hanging there in the purple twilight produced by the binary worlds. That pinpoint was a reminder, too, a reminder that he could cut his leave short any time he wished and return to the routine of his service with the Consortium. But he didn't *want* to go back early. With six years still on his contract, he'd already had more than his fill of the pale-blooded Basiri and their muted, understated ways. He was tired of "living," to abuse the word, in quarters of metal and plastic instead of good, honest stone. He was tired of fighting for someone else's profit, even if it was the only way he would ever obtain the means to lead a proud and honorable life back home as anything other than a pampered, indulged, *tolerated* younger son of the Clan-lord. In short, he was going to enjoy any diversion he could find, no matter how depressing. But he couldn't drink in the bars, or dance in the

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streets, or sleep with the women, or even find release in a good, strenuous brawl.

That left the girl.

Purely as an exercise in aesthetic appreciation, of course. In point of fact, he found little to like in most of the women of the Consortium and the Terran Confederacy. He found their directness of personality and boldness of dress crass in comparison with the demure reserve and chaste attire of Galatian women.

The only problem with that was that the nearest Galatian woman was back on Galatia.

In the meantime, this girl (for he found it impossible to think of anything so slight as a woman) was of the most common Terran or late-period T-colonist stock, perhaps a foot taller than Óin, with a matte-tan complexion and straight black hair that hung loose and flowing down her back. She moved well, for a human; if not with Óin's bouncy contempt for the feeble T-standard gravity then certainly in a most amiable accomodation with it.

Óin followed the girl and her escort through the crowd, mildly interested. It wasn't the same as having a proper Galatian woman to admire, of course. Still, the hair was right, and the skin was almost right, and the Chinese-collared tunic and cullottes she wore reminded him more than a little of the women's modest clothing at home–

"Goddammit," she said. "We lost him."

"Or he lost us," Den Ryan agreed.

They paused by a sweetmeats vendor outside of a *chorst* palace, and Dani Yuen absently accepted the bag of candies Ryan handed her. They looked for all the world like two footsore tourists stopping to enjoy the sights around them, rather than what they truly were: two professionals waiting for a third to try and kill them.

Dani studied the crowd passing them. She saw gaudy Fair costumes and the iridescent leathers of dragonskinners, and Basiri merchants in their skullcaps and pale blue robes. Nowhere could she see the flat off-white of symbioplast armor.

"He must have cammed," she said. The light didn't help. On top of the tarnished-brass "daylight" cast by the combined binaries, the walls of the city's buildings had been gaudily adorned with an astonishing variety of lights and luminescent paints. Some of it had been strung up or sprayed on in intricate combinations, meticulously planned; but more, most of it in fact, had simply been slapped up at random to see what effect the changing natural light would pro-

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duce. Nothing was the color it should have been.

Den Ryan, the taller of the two, with an atavistic Nordic cast to his complexion, took advantage of his two meters' height to search the faces around them. He saw a jumbled mosaic of masks and makeup, broken occasionally by aquiline Basiri features or an excitingly brief glimpse of scales or chitin.

"Why would he bother?" he asked. Nowhere could he see the featureless mask of a symbioplast visor.

"Maybe he doesn't want any official attention," Dani suggested.

"Then Guild White would be his best bet," Ryan argued. "What outworld constable is going to mess in Guild business?"

"Mmm," Dani conceded, turning her attention to several suspiciously-plastic sleeknesses around them.

Then she saw the Guildsman.

He *had* camouflaged, and there was no way of telling how long he had been watching them, leaning against the old stone wall in pebbly anonymity. Dani quietly pointed him out to Ryan.

Then the Guildsman straightened, and the color of his armor swam and shifted and bleached away, leaving him the color of old bronze under the mixed light. The partying Wolkenheimers flowed around him in unbroken streams, unperturbed by the predator in their midst. After all, it was Symmetry Fair, and if someone had the morbid sort of sense of humor that was tickled by dressing up as a professional killer, why, let him, then.

And if it wasn't a costume–well, no one in his right mind would knowingly cross a Guildsman.

"All right," Dani said, "how do we work this?"

Without seeming to, Den Ryan studied the street around them, considering the vulnerable, unsuspecting crowds of Fairgoers.

"We have to get him out of this crowd, first thing," he said. "If we start anything here, they'll be hauling burned bystanders out of here by the vanload."

"Wonderful." Dani grimaced. "How did we get into this, anyway?"

"We were here, we were convenient—"

"We were screwed."

"That too."

"This was *supposed* to be a vacation."

" 'Duty knows no rest'. The manual says so."

"Lucky for them we're such idealists. Dammit, Den, he's got *armor*!"

"So next year we take our vacation somewhere else. That street we passed looked reasonably empty. Good enough?"

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"Considering that he's probably heard every word we've said, it'll have to be. Let's get it done."

The Guildsman stepped away from the wall. He thought the coded thought, drilled into him until it was virtually an autonomic response, and the pebbly camouflage pattern vanished from his body. The street and its denizens, garish enough to the unaided eye, took on hallucinatory proportions for him through the optical boosting and tracking aids that picked out his quarry. A muted tingling at the back of his wrists whispered of the plasma gauntlets' readiness. He considered how easy it would be to protect himself now, with a single broad gesture that would sweep his opponents away in ashes and blue flame. But the crowds were a deterrent. Too many excess deaths and his arrangement with the Terran Confederacy would be imperiled; they would be unwilling to associate themselves with such butchery, even to obtain what he offered them.

Mutterings swelled and faded in his ears as the suit's systems filtered crowd noises away and highlighted Dani and Ryan's conversation. He listened to them decide on a course of action and, for a moment, the desire rose within him to spite them by simply walking in the opposite direction, leaving them to wait in their futile ambush. But then they could yet find him again, at a less opportune time, when he might not be aware of their presence until the lasers were flaring at his back. . . .

Moving smoothly, graceful in the power of the armor, he stepped into the street and started after them.

Aesthetic appreciation of the feminine form was all to the good, but there were other urges not so conveniently suppressed. More to the point, human beverages, while not potent enough to leave Óin more than somewhat heavily buzzed, were having another unavoidable effect.

The alley was long, it was dark, and it was convenient. Óin entered it, fumbling with a fastening seemingly designed to resist opening in direct proportion to immediacy of need and degree of inebriation.

He settled himself behind a large pile of rubbish that screened him from the street. He sighed with the pleasure of overdue release–and the alley blew up. There was a flash of blue light and a crackling noise. Something fell heavily against his rubbish heap, spattering him with garbage.

He lurched into the open, fumbling with his fly, just in time to see Ryan's burning body slide off the rubbish heap to the ground.

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Then, past the flaming corpse, a tall, faceless figure appeared. It stood poised with extended arm and bent wrist, fist wreathed in a cerulean halo.

It was the relative slowness of human reactions that saved him then, rather than his own drunken response. He lurched forward as the Guildsman noticed him and began to turn his way. Óin slammed a three-fingered fist clumsily against the Guildsman's chest. The blow threw the assassin back against the alley wall, and he disappeared beneath a small avalanche of collapsing trash.

The garbage erupted in streamers of blue energy as the Guildsman fired blindly while he struggled to free himself. The plasma charges struck walls and junk, splashing stone and permaplast and setting filth alight. The air thickened with the tang of ozone and the stink of burning garbage. Óin wasn't drunk enough to face that. He grabbed up a trashbin and flung it roughly in the direction of the killer, then turned and bolted towards the end of the alley. He took one step and barged into something that let out an explosive *whoof!* He tried to bull past whatever it was, but it tangled in his legs as it fell and brought him down.

He came to his knees and saw the girl curled up in a gasping ball, black hair fanned out on the alley floor.

Behind her the Guildsman lurched free of the encumbering junk. a great starred crack marring his left breast, shoulders hunched in anger. His fists were invisible in balls of blue light.

Something metallic glittered near the stunned girl, a silver tube with a lens at one end. Óin took it up–it was something to throw, if nothing else–and his oversized grip depressed the stud on the tube.

The finger-thick scarlet thread gouged a foot-long scar in the ground before Óin realized it was a weapon and turned it towards the Guildsman. The laser swept the side of the alley, cutting a wavering gash the length of the wall. It leapt across the street as Óin swung it clear of the wall, ripping into the face of the building across from the alley. It scored the ribs of the Guildsman as he twisted desperately aside, trying to evade it. Óin swung it to follow him–

–and the single-pulse laser cut out with a sharp *crack,* leaving the burned-out tube warm in Óin's hand. The faceless assassin had fallen and was now struggling to his knees, a marionette miming pain.

Óin didn't wait to see if he'd make it. He grabbed the girl up under one arm and ran for the end of the alley, away from the flames and

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the Guildsman. There was a shabby fence in the way, blocking access to the street beyond. Óin went at it at a dead run and jumped.

If he'd been wholly sober, he'd have made it. If the girl hadn't been there to throw his balance off, he'd have made it. He wasn't. She was. He didn't.

His trailing foot caught the edge of the fence and slammed him down squarely atop a drink vendor's cart. He picked his way out of the tangled wreckage, ignoring the screams of the scattered drinkers and the curses of the vendor, and moved off into the crowd. Foul smoke began to waft over the fence, adding to the confusion.

By the time the Guildsman vaulted the fence a second later, clumsy in his savaged armor, Óin and his burden were nowhere to be seen. The sprawled people around the drink cart stared at him in silence, certain without reason that this was no costumed player. He stood there, faceless and grim in his wounds, and turned his blank visor down towards them, and raised a fist. There was a faint hum, the slightest scent of ozone, the least tinge of blue luminance.

Half a dozen prudent hands quickly pointed out Óin's path.

Wordlessly, because to speak would have been to give voice to the pain that racked his side, the Guildsman set off in pursuit. He moved slowly, giving his armor time to heal. His chest ached from Óin's fist, and he held his arm pressed tight against his side to ease the strain on the laser scar. Current flowed through the layered symbioplast as the armor drew on its enerpacs to fuse the damaged sections into a new whole.

The Guildsman was angry. He'd figured the set-up and reversed the intended ambush on its planners perfectly. That should have been the end of that. And then that *creature* had reared up out of the garbage to turn a clear victory into barest survival.

Worry overshadowed the anger. Óin had been a nasty shock to the Guildsman–because up to that point he *had* been, however reluctantly, *a Guildsman,* one of the servants of the most feared and powerful agency in the Confederacy . . . and some shaggy little gnome had bounced him off a wall like he was nothing, armor and all.

Resolution overshadowed worry. The Guildsman–how he *hated* that, how he hated knowing that whatever else, whatever his motives, whatever his aims, whatever his *name,* he was a *Guildsman* to the rest of the world and nothing more—had sworn that he would be free of the Guild and all its works. Any agents of the Guild, be they man, woman, or trash-spattered troll would have to take their own chances.

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Triply armored then, in plastic and anger and self-pity, the Guildsman slipped through the uncaring crowds, in search.

He felt like hell.

The physical stress and emotional stimulus of his encounter with the Guildsman had taken the shine off Óin's drunk, leaving him restless and uncomfortable and annoyed at missing both his chemical pleasures and the cathartic release of a good brawl. The clash with the assassin hadn't lasted long enough to be enjoyable. Besides, it was hardly an engagement worth bragging about, lurching around an alley throwing garbage cans with one hand and hitching at his trousers with the other.

He was moving back towards the lighter fields, responding to some half-formed urge to get back onto familiar territory. On closer examination, the notion was amusing. A Galatian Dwarf in the service of the Consortium was a long way from *any* familiar territory.

At least the girl over his shoulder seemed to be feeling better. She was wheezing and hawking much more comfortably as they entered the shabby little hotel on the fringes of the field district.

It was an elderly structure of weathered stone and permaplast, one of the oldest buildings in Hansen's Landing. Other buildings of its period had been carefully preserved as monuments to the colony's history. This one preserved an even earlier tradition, serving as a discreet bundling-house where farm men in from the outlying districts could partake of the port whores in safe anonymity. A man and a woman entering such a place would attract no attention, and it was a quick way to get off the street.

Óin knew that this hotel would have a vacancy. If nothing else, they could always use the ex-badgerman's flat.

The cadaverous Jirin clerk looked up and paled as he saw the blocky little alien stump into the lobby. For a moment, he feverishly considered summoning the house's entire complement of bouncers. Then he discarded the notion. Several of them weren't bad sorts, as bouncers went, and he didn't particularly want to see them damaged.

"Must be a new girl in the neighborhood," he said with a nervous simper, making a sibilant mess of the Basiri Trade Tongue. "Usually they have to carry you fellows in. Oh, well, she'll get used to it soon enough, I'm sure."

"I'm sure," Óin agreed, "and in the meantime she'll probably give me my money's worth. Now, may I have a room?"

"Oh, good sir," moaned the clerk, "much as it pains me, and truly, it *does* grieve me for I shouldn't wish you to think that we hold past

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differences against our customers, I'm really afraid that we have no–"

Óin stabbed a thick finger down on the desk bell. There was a strangled *pingk* as the bell crumpled and the plunger was driven half its length through the base and into the surface of the desk.

"–but perhaps I can find something for you," the clerk finished. It was a quick search.

Óin took the key-plate and turned for the lift. The dilapidated door slid back three inches and jammed.

"Oh, sir?" the clerk ventured. Óin turned to look at him, one hand gripping the door. A firm shove and it slid open with a rasp of stripping gears.

"Yes?" Óin extended a foot into the cylinder and stopped the rising plate. The clerk deeply regretted having opened his mouth, but pressed on with unclerkly courage.

"Sir, I am obliged to enquire as to whether the lady is accompanying you willingly. . . "

"So?"

"Well–is she?"

The girl wheezed.

"Satisfied?" Óin asked. The plate was making little humming noises as it tried to rise past his foot.

"Oh, yes, sir, quite satisfied, thank you."

"That's nice."

The lift plate wallowed under their combined weight. Óin tried to give it a boost with a sharp slap against the tube wall. He didn't quite manage to unbalance the plate.

The room was identical to the last one he'd taken there, a single room with an attached bathroom, one large bed and a cheap chest of drawers. There were no kitchen facilities; no one ever stayed in such a place long enough to cook. The permaplast walls had been left their natural dead fishbelly shade, enhanced in places with liberal applications of dirt and smears of prestoplast sealing over the damages inflicted by previous occupants.

The bed hadn't been tuned since the day it had been installed. The girl nearly sank to the grids when Óin put her down, then bobbed back up within the frame.

Óin went into the bathroom. His tunic was a mess of soot from the alley and stains from his kamikaze dive on the drink cart. He pulled it off and rinsed it out in the dirty sink, then hung it in the shower to dry. He filled the basin and began splashing cold water on his face, trying to clear away the internal bleariness by washing

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off the external dirt.

Dani gathered herself, focused her will, and took a long, deep breath against the fading paralytic shrieks her solar plexus was still sending out. She opened her eyes and the empty, floating feeling explained itself. She was floating in the erratic field of a decrepit bed in a grimy little room.

She floated in the bed, reviewing her situation before she chose a course of action. The major elements came back readily–laying the ambush in the sidestreet; the Guildsman surprising them by coming around the corner firing, heedless of bystanders; Ryan missing his shot and dying in the mouth of the alley; a strange, squat little creature erupting from the garbage and attacking the Guildsman, then slamming into her like a runaway van–

Den Ryan was dead. The knowledge forced itself to the forefront of her awareness.

There had been no love between them, no overwhelming, exclusive mutual involvement. But they'd been together for five years and she *knew* Den Ryan, knew how he felt and thought and acted, what he'd tell her and what he'd keep to himself. That made it hurt, in spite of all her training. That made it hurt a lot.

The memories came less clearly, then. They formed a disjointed montage of smoke and sidewalks and inverted feet passing her, then the room itself.

The sound of running water and splashing came from beyond the bathroom door. Dani rose quietly from the bed and slipped to the door. She tried the latch.

"It's locked," came a voice from the bathroom, in oddly accented Terric.

So. The door was locked. It was doubtful that she could pick the lock before whoever was behind the voice came out. Dani was trained to assume that whoever it was would not willingly surrender the key. The situation required simplification.

A figure appeared in the bathroom door and Dani snapped a precise *jungeri* kick into it. It would have taken an average person solidly in the chest, stealing their wind and perhaps breaking a rib or two as well.

It caught Óin Ceiragh square in the throat.

The backhanded slap, even half-checked as it was, took Dani high on the shoulder and threw her across the bed. She fell against the wall and landed sitting in the corner, the sliver gun from her boot-top steady in her hand.

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Óin stood where she'd kicked him, rubbing his abused windpipe. He should have been dead. He wasn't. It was easy to see why.

He was built like a tree-stump. His trapezius muscles were so massively developed that it seemed as if his leonine head rested directly on his shoulders. His arms were as thick around as her thighs, the flexor groups in the forearms nearly as well developed as the biceps and triceps. His torso made not the slightest concession to a waist, flowing straight from shoulders to hips, with deep, perfect cuts that would have made a Terran bodybuilder forswear his calling.

He stood perhaps four and a half feet tall.

"You're a dwarf," she said.

He withdrew a massaging hand the color of tanned bark from under his thick beard and scowled at her. He had fierce, black eyes. The lowered hand brushed the side of his knee.

"I've been called that," admitted the creature. "Actually, though, I'm just about average size for my height." His voice was like heavy rocks tumbling down a hillside.

He glared at the small pistol in her hand.

"If you shoot me with that thing and I ever hear about it, I'll be terribly cross with you," he warned.

Dani studied him for a moment and slipped the gun back into her boot. He was probably right. He exuded the same air of scarcely-tapped vitality she had seen in a Kodiak bear once, on Terra. He could be killed readily enough, she was certain, but he wouldn't die easily. Or alone.

"I'll take your word for it," she said. "Why are you holding me here?"

"I never said I was holding you," he answered, somewhat irritably. "I said it was locked. You never asked for the key." He was sober now. Galatian Dwarves had to work at a drunk; their active metabolisms broke down substances too quickly.

"May I have the key?" Dani asked.

"You can have the whole room if you want it," Óin said. "I'm leaving just as soon as my tunic dries. *And* I get an explanation."

"An explanation of what?" Dani asked.

"An explanation of what, she says. Of anything now, anything at all; the weather, your philosophy of life, why somebody would burn down an alley trying to kill you, anything like that. Whatever you wish."

"It's midTrollsday. I'm a Reformed Buddhist."

"That's nice, whatever it is. And–?"

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Dani looked up at him, sitting in the corner, hands draped across her knees. "He's a Guildsman."

"That means nothing to me."

"That's right, they probably wouldn't know about the Guild in the Consortium, would they? I meant the Guild of Assassins."

Assassins. To a Galatian Dwarf, from a world of squabbling clans and bloodfeuds and border contests, a word loaded with nasty connotations. To a son of a titled family–which was the main reason Óin was wandering the streets of Hansen's Landing–an even more objectionable term.

Yet it was the first familiar thing he'd encountered since taking the Consortium's colors. Ah, the wonder of roaming the stars, Óin thought bitterly.

"Why would an assassin be after you?"

"He isn't. Wasn't."

"Then why should you be troubling him?"

"It's my job."

"You're with the Confederacy, then?"

"It's the armor," she said. "The Confederacy has nothing like it. It'd do anything to get hold of a sample."

"It didn't seem so impressive to me," Óin said, recalling the image of the armored killer slamming off an alley wall.

"Who ran, you or him?" Dani asked. Óin grumbled something unintelligible. "Symbioplast armor is the closest thing to a perfect individual combat system in the Confederacy. It's tough as hell–but I see you discovered that," she finished, eyeing his barked knuckles.

"I put a pretty fair dent in him," Óin protested.

Dani looked at him with renewed interest. "If that's true, it's impressive. Guild armor will turn anything short of a two-by-fifty sliver or a megawatt laser."

"Do you have those?"

"I had the laser."

"The tube thing? I used that. It didn't work."

"Then I've got a problem."

"If you go after him again, you do. I wouldn't. I'd just as soon not even see him again."

"Well, I have to."

"Why?"

"It's my job."

"Creac's eyes, a patriot. I haven't seen many of those out here."

"It's an old-fashioned virtue, true," she smiled. "Besides, I'm no patriot, just a professional, I'd like to think."

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"Well, there's little enough of either quality around to see it go to waste like that. You don't have another laser?"

"How many do you think we carry? I've got my gun–but it's only a two-by-ten–a few sun pellets, and a knife. I've got my breaking-and-entering kit, but I really don't think he'll stand still long enough for me to pick the seals on his armor."

"What about your friend, was he carrying anything else?"

"Well, if he was, it won't do me a whole hell of a lot of good now, will it?" she said, the bitterness welling up in spite of herself. "It burned with him."

"Yes . . ." Óin said, unsettled by her show of emotion. He made a vague gesture with one hand. He wanted to touch her, to console her, but she was too far from where he stood. The act would have been too awkward, exaggerated, false. He let the hand drop.

"I'm sorry about that," he said, lamely.

"You can spare me that," she snapped. "You never even met him. It isn't any loss to you."

"No, I suppose it isn't," Óin agreed, embarrassed. "Look, then, if the Confederacy wants this so badly, why don't you call in more help? Why try and finish this thing alone?"

"Because it's *my* job, now. He owes me."

"So he does. But I don't think it's a debt you can collect on your own."

"There isn't much of any other way I can do it."

"I think there is."

Dani looked at him. "By God, I think the man's volunteering. Why? Sympathy for the poor Earthgirl's dire plight?"

"Maybe I just like vengeful patriots," Óin grinned. "In any case, I certainly didn't say anything about volunteering. I'm a loyal servant of the Consortium, *Aya*—?"

"Yuen. Dani Yuen."

"*Aya* Yuen, and as a loyal servant of the Consortium I should certainly expect some compensation for my services."

"Like what?"

"Buy out the remainder of my contract. I'll get your assassin for you; you send me home afterward."

"What's the balance of your contract?"

"Six years' service at twelve thousand Consortium Credit Units a year."

"You're joking."

"About *business*?"

"No, that would be out of character for anyone mixed up with the

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Basiri, wouldn't it? But seventy-two thousand CCUs for one job?"

"Among other coin. But consider this before you answer–I put a dent in him once before, when I was falling-down drunk with my pants around my knees. I can do better now, I'm sure. And if I'm right, can you afford not to hire me?"

"No, I don't suppose I can."

The only way to find the Guildsman again was to go out in the streets and let him try to kill them.

Óin and Dani moved through the crowded streets. They looked at the windows and they looked at the doors. They looked at the crowds around them but the Guildsman was not to be found, not in such a press.

Brazen Trollshulm had set, leaving the streets lit by the pacific green glow of Hansenwald and the wild Fair street lighting.

"I'm afraid I really can't grasp this," Óin was saying. "How could a whole *Guild* of assassins exist? Why isn't it put down?"

"The armor, for one thing. What do you put something like that down with?"

"With numbers, if nothing else," Óin said. "There can't be so many of them that they can dominate an opposed populace, can there?"

"Maybe not. But who says the populace opposes them?"

"What?"

"Why should the people oppose the Guild?"

"Why should–they're assassins, woman! It's your own name for them!"

"Mm-hmm. So?"

"*So*?" Óin was beyond further comment.

Dani looked at him with a mixture of worldly amusement and curiosity. "What's so astonishing? You said you have assassins on Galatia; you must know what they are."

"Of course we know what they are! That's why we despise them!"

"Is it? What do your assassins do?"

Óin gaped at her. He would have had a readier answer had she asked him what the tree did, or a rock. "What does any assassin do? He's a killer, a treacherous murderer of heroes too bold to be slain in honest combat, of leaders too virtuous to be deposed by the popular will of the clans. That's what an assassin does."

Dani shook her head. "An assassin is the political instrument of last resort," she recited, as though she were quoting something. "At least the professionals are. What do you know of Earth?"

"Little enough. More than I'd like to if they can hold an attitude

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such as that there."

"There are twelve billion people on Earth. That's a bit many for government to be handled by a gathering of the clans, assuming we had clans. And assuming the leaders would listen in any case. That's not always so. So we have the Guild."

"And that's supposed to justify it? The people are too spineless to throw down their own tyrants, so they go and hire a murderer?"

"No one hires a Guildsman. The Guild picks its own victims, by its own rules. If the global council is being pressured to loosen the birth laws, then the Guild kills a few of the louder bishops or maharishis. If some industrial magnate insists on pouring filth into the air or water the Guild just kills him rather than let him get away with it through all the years of legal bickering that would follow."

"You let people *debate* fouling your own world?"

"Legally, we have to. Now you can see why the Guild has something of a following, at least in the commoner circles."

"Are you defending them, then?"

Dani sighed. "They're 'gun law.' Their example encourages fanatics to emulate them, although the Guild has the decency to eliminate the more rabid amateurs themselves. But they serve a purpose, you can't get around that. I suppose the best thing you can say about the Guild is that things would be worse without it."

Óin studied her, briefly. "If you feel that way, why are you so willing to go against them?"

Dani's mouth tightened. "I've got a job to do."

"That, and they killed a friend?"

"I've got a job to do."

Óin chuckled. "Eochain Long-Hair."

"What?"

"An old Galatian legend. Eochain Long-Hair was the daughter of a tyrant whose clan rose and slew him. She was sympathetic to the rebels but she knew her duty to her father, and sought the rebel leaders and slew them in turn. It's a very long song about honor and dignity and the virtues of maidens."

Dani smiled. "Well, that lets *me* out, that last bit."

"There are virtues other than chastity," Óin said. "That's what the song was about."

"Oh."

The crowd scattered before the armored man like gaily colored tropical fish before some great predator of the reefs.

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A groundvan, rash enough to risk the Fair-jammed streets, jolted to a sudden halt as the white-clad figure suddenly appeared before it.

The harassed driver, brave in his ignorance, leaned out of his cab and hurled a stream of profanity at the Guildsman's receding back.

The Guildsman ignored the curses, just as he ignored the protests and glares of the people he shoved roughly from his path in his effort to keep sight of the couple ahead of him.

The Guildsman had found his prey.

The lighter field stretched out before them, empty at this odd hour save for the hulking shapes of several ships and service gear; the perfect place for some discreet violence.

"I think it's time we discussed that other coin you mentioned," Dani said.

"Do you? And why now, of a sudden?"

"Because your job was about a hundred yards behind us at that last intersection."

"Ah, indeed." The fence bordering the lighter field was nothing formidable–after all, making smuggling *too* difficult would have been bad for business–and the lock on the service gate had crumpled like foil in Óin's hand.

Óin and Dani walked out onto the flat permaplast apron of the lighter field. Behind them, past the city, the sun was rising. A roseate glow began to stain the sky above the garish buildings, driving back the false green "daylight."

Ahead of them, the swollen bulk of an intrasystem freighter loomed up out of its launch pit. In the glare of the field lights on their graceful pylons they could see that at least one naval architect in the Terran Confederacy had a sense of humor: emblazoned around the top of the grossly-distended cargo section was the name *Gravid.*

"Can he see us now, do you think?" Óin asked.

"No, I think he'll have to come out onto the field after us. But he'll pick up our heat shadow before he sees us properly."

"Good. Now, what's the question about my payment? As I said before, you need my services; you can't afford not to hire me."

"I know that. But I'm limited as to what I can offer you personally, and those seventy-two thousand CCUs are going to cause enough trouble. I wouldn't want you to think you were being taken advantage of or anything," she finished, a little archly, watching the way they'd come. The field stayed empty.

"Well, now, that's a generous sentiment and I appreciate the

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thought, yes I do. Of course, I'd have appreciated it even more if you'd brought this up before I was stuck between your assassin out there and an empty field."

"You can call this off any time you like."

"I know that, but I'd still have to get past him to do so, wouldn't I?"

Dani grinned. "So I practiced a little enlightened self-interest."

Óin chuckled. One thing the Basiri had given him was an appreciation for sharp dealing. "In any case, I've already been paid in the coin in question, thank you."

Dani's grin faded. "You have? How?"

"Takes a bit of explaining. . . ."

"Am I going somewhere?"

"Well, simply put, I've been three years in the service of the Consortium, and do you know, this is the first time in three years that I've had the slightest idea what I was doing. I've seen six worlds and liked none of them, fought three wars and never known why. But I did it, because it was the only way I could ever afford to start a Holding of my own, back home, and that's the one thing I want more than anything. And now you come along with this assassin of yours, and that's good. For I know what an assassin is, even if you try to tell me differently, and I know what to do about them, and why. That's a feeling I haven't had in a long time. And on top of it, it gives me a chance to earn my Holding in an honorable manner, instead of dragging my name through all of these petty commercial haggles. So my extra payment is taken care of nicely, I should think. Thank you."

There was silence. Dani had no response that she could give him.

There was a flicker of movement at the service gate they'd entered by—not much, just the least glimpse of something moving.

It was enough.

Óin Ceiragh turned and looked at Dani Yuen, grinning broadly as he contemplated killing one of the two people on Wolkenheim he thought he understood.

"Let's get it done," he said.

The Guildsman began to pick up speed as he moved through the concealing equipment. The lambent, crackling auras that encased his fists barely matched the hot flame in the pit of his stomach. The energy coursing through his plastic skin made a barely-fit companion for the driving excitement building in his chest. It was over. He would finish it now, here, and it would be over. Then he would meet

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the Confederacy's agent, hand over the armor, and be a free man, with a new identity and passage to any world in the Confederacy.

The machinery rested black on the concrete around him, cooler than the dawn breeze that passed over it. Ahead and just to his left there was a faint infrared shadow outlining a small cart unit right up against the lighter's hull. His sensors, attuned to his quarry's distinctive trace, had marked the glow with luminous green tell-tales.

A figure–the troll!–broke from the machine's concealment. The Guildsman swung, raising his fist–and Óin was gone from sight behind another machine. Arm extended, the Guildsman stalked forward, moving with predatory, confident grace, keeping half an eye on Óin's original hiding place.

There was a flicker of movement as a tiny something struck the pavement before him. Then there was nothing to be seen but *light* and then *black* as the sun pellet bounced into the air and detonated. The armor's optics tried frantically to cope with the sudden brilliance, dropped shields . . . and blinded the Guildsman.

The Guildsman went with his first, animal response, lashing out with blue fire at Óin's new hiding place. But Óin was already moving, head averted to spare his sight. He braced his legs against a heavy generator cart, pushed off with a force that set the thing skidding for several feet. Óin rocketed into the Guildsman's back, making the assassin cry out, a horrible, scratching sound through the armor's distorting filters. Only the armor saved the Guildsman's spine.

The mercenary straightened as the Guildsman stumbled forward. The killer was turning even as he lurched upright; desperately quick for a human, but a measured and stately pace next to high-gravity-quickened Galatian reflexes. Óin slipped a hand under the slowly-rising arm and flipped it up above the Guildsman's head, then drove two quick punches into the assassin's chest.

The symbioplast didn't quite yield before the first blow; it landed atop the thickened repair where Óin's earlier punch had landed. The second struck the sternum, and fresh cracks marred the plastic's surface.

It wasn't a fight. The Guild armor was incredibly powerful, perhaps even stronger than Óin's natural strength. But the man within was a human man, with human responses, and against the frighteningly fast Óin Ceiragh he was completely ineffective.

To Dani, watching from cover, it was like watching a demonstration back in Training; like watching the wizened Okinawan who

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had taught them unarmed combat humiliate a brawny trainee cocksure and over-reliant on his own strength. Óin would slap one or the other of the lethal plasma gauntlets up out of line and plunge in with a punishing attack to the Guildsman's body before he could react, and when the assassin's counter finally came he would be somewhere else, behind him or to the other side, ready to start again. The armor was absorbing most of the punishment, as it had been designed to do, but the blows were beginning to work their way in to the soft flesh and bone underneath.

It was chance that felled Óin Ceiragh.

He weaved around and behind the Guildsman, under his useless, upraised arm, and jabbed an elbow back into the armored man's kidney. The assassin spasmed, reflexively yanking his arm down—and his armored elbow drove with its full force into Óin's shoulder. Óin bellowed in astonishment and pain as the joint separated, and the Guildsman, following through on the initial contact, brought his forearm down on the back of Óin's neck.

Óin straightened up through the scarlet fog that enveloped him, and brought his good fist around in a backhanded punch that crushed the seals on the Guildsman's visor and stripped it away. The twisting pressure on the ruined shoulder thickened the redness around him again, and when it cleared he was looking at the Guildsman's fist, surrounded with blue flame. The Guildsman's eyes locked with his, wide with pain and anger and startlingly blue. There was a deep gash in one cheek where the ruined visor had gouged his face. Óin felt the touch of the plasma gauntlet's conductance beam . . .

The assassin's face dissolved in a scarlet froth as Dani fired a half-second burst of slivers into it. The arm dropped limply away and the assassin, his ruined head cradled in the remaining fragment of helmet, fell back and lay still.

There was a moment's peace, an instant's stasis on the lighter field. The sky overhead was largely blue now as Hansen's Primary itself rose above the buildings. Only along the far horizon did a slight aquamarine tinge mark Hansenwald's setting. In the distance the Fair lights were beginning to flicker off, their fascination lost in the mundane daylight.

The ruined armor registered the death within it and the destruct circuit faithfully triggered its overload on the charged enerpacs, Óin lurched backwards, clutching at his injured arm, as the Guildsman was reduced to slag and ash in a final burst of energy.

Óin staggered back from the heat and sat down, heavily, against

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a cart. Dani came up, slipping her gun back into her boot.

"*Ai, shta,*" Óin cursed, mechanically. "*Shta. Ai, shta.*" He looked up, frustration and pain etched across his face. "I'm sorry," he said, "I'm sorry. I didn't know that would happen. I didn't . . ."

Dani didn't look at him. Instead she kept her eyes on the puddle of ruined plastic at her feet.

"I did," she said quietly.

"What?"

"You did fine," Dani assured him. "Just fine."

"But the armor's ruined!" Óin protested. "It's worthless now."

Dani finally looked at him. "That was the idea."

Óin floundered, groggy with pain and confusion, groping for words.

"It's like I said before," Dani explained, "The armor is the only thing that keeps the Guild going. We couldn't let the Confederacy get a sample."

Óin stared at her, sick with sudden knowledge.

Dani frowned at his expression. "I told you I was no patriot," she said, as though answering a spoken accusation. "Just a professional. Although maybe I am at that, I don't know. I don't pretend to be an expert on these things. I just do what seems right."

She looked around. In the distance she could see the flashing lights of a Field Security groundvan.

"I can't stay here," she said. "The police will get your arm taken care of. Don't worry about any trouble. You just killed a Guildsman, remember? You'll be a saint to them. We'll contact the Consortium about your contract."

He didn't answer. He just stared at her and felt the corruption swelling within him.

Dani's frown wavered, and when she spoke again there was no mockery in her voice.

"You shouldn't put your faith in the virtues of maidens," she said, and walked away and out of sight among the machines.

Óin exhaled, a slow, shuddering sob. He looked up. The sun was well above the city now, the streets deserted as the Fair crowds retreated to await the next rising of the binaries. The Fair decorations looked grotesque, tawdry and out-of-place in the strong daylight, like most illusions.

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WEIRD NUMBERS FROM TITAN
by Martin Gardner

Our old friends, Captain Larc Snaag and mathematician Ronald Couth of the spaceship Bagel, *are still investigating strange mathematical messages from Titan.*

After the crew of the spaceship *Bagel* observed a geometrical symbol glowing below the orange clouds of Titan (see "Titan's Titanic Symbol" in this magazine for January 1980), it was obvious that intelligent life flourished on Saturn's largest moon.

"If the Titans went to all that trouble of constructing such a mammoth symbol," said the *Bagel's* captain, Larc Snaag, "it must be because they want others in the solar system to know they're there. If so, surely they must also be broadcasting a radio message to outsiders."

Frank Flake, the crew's chief radioman, was at once ordered to make a thorough search of all radio frequencies. A few hours later he reported, in great excitement, that a coded message was coming through loud and clear.

"It's a series of beeps," said Flake, "separated by pauses. They're sending a curious number sequence."

"The primes?" asked Snaag. "Or maybe pi or the square root of two?"

"No, nothing that simple." Flake handed Snaag a sheet on which the following sequence was written:

1 3 7 12 18 26 35 45 56 69
83 98 . . .

"The sequence goes up to a hundred numbers," said Flake, "then it's repeated over and over again. VOZ [the ship's computer] is studying it now."

A short time later Ronald Couth, the *Bagel's* computer officer, burst into the captain's quarters. "It's beautiful! VOZ says the sequence was discovered in the 1970s by Douglas R. Hofstadter, who called them 'weird numbers.' He gave the sequence on page 73 of

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his classic 1979 book, *Gödel, Escher, Bach: an Eternal Golden Braid.*"

"A marvelous book," said Snaag. "I read it when I was in college. But I don't remember the sequence. How's it formed?"

Couth jotted down the first six numbers, then under each pair of numbers he put the pair's difference:

```
1   3   7   12   18   26 . . .
  2   4   5    6    8 . . .
```

"The sequence," said Couth, "and its first row of differences contain all the counting numbers, each number appearing just once. It's unique if we assume that the numbers in both rows, as well as the two starting numbers of each row, are in increasing order. The construction method is easy. Begin with 1. The next number can't be 2 because that would duplicate 2 in the row below, so it must be 3. The next number can't be 4, 5, or 6 because that would put a 1, 2, or 3 in the row beneath, so it must be 7. And so on. It's obvious that the two rows catch all the positive integers, although the numbers at the top increase in size much faster than those beneath."

"I wonder," said Snaag, "if this can be generalized. Is there a sequence with first and second rows of differences such that the three sequences catch all the counting numbers, with no duplicates?"

"Yes," said Couth. "It was clever of you to ask that. VOZ reports that this generalization was found by Neil J. A. Sloane, at Bell Laboratories, soon after the weird numbers were published."

"Bell Labs?" said Snaag. "What's that?"

"They used to make a communication device," said Couth. "It was so crude that it transmitted by cables that formed a web all over the United States."

How does the generalized sequence—call them doubly weird numbers—go? For the solution see page 65.

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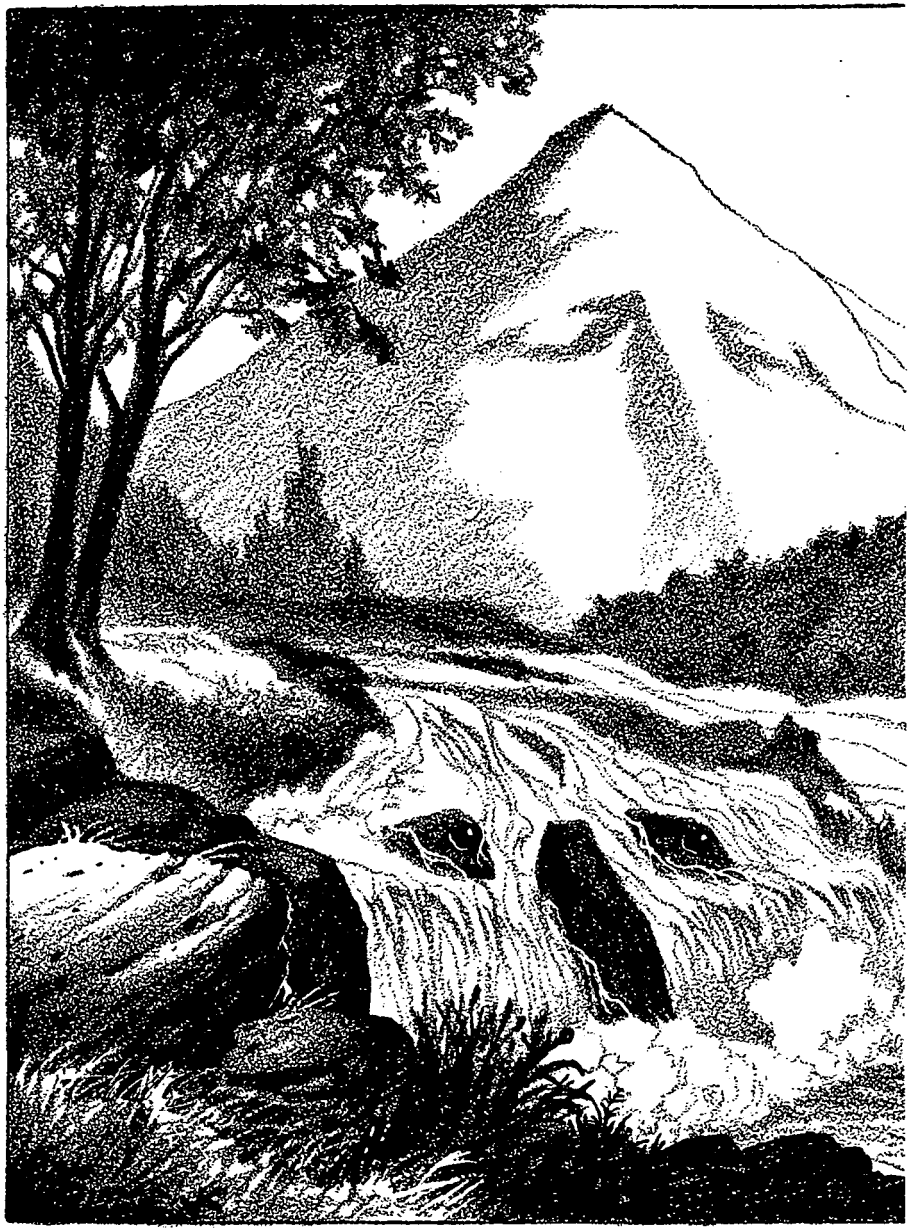

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THE HOT AND COLD RUNNING WATERFALL

by Stephen Tall

art: Jack Gaughan

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The author's first SF story was published in 1955, the first of some 35. His new book, The People Beyond the Wall, *is scheduled for early 1980. He is a biologist, now professor emeritus of that field, Towson State University, Maryland. Chief interests are alpine and arctic ecology, ornithology, wilderness photography, and travel.*

Hubert lived by a waterfall. Actually, that statement is too simple to cover the facts. More correctly, Hubert had camped by the waterfall for the past several summers, and had almost come to regard the location of his lean-to in the canyon as home. He liked the sound of the water; he liked the coolness of the little canyon; he liked the solitude. To Hubert, as we shall see, it wasn't solitude at all.

Hubert's concerns were neither profound nor complex. He enjoyed the view from the mountain. He liked the air. The shudderingly cold shower the waterfall provided made his breakfast taste prime. The sunrise was best from the clifftop; and later, when the rays grew hot, he sat under a lightning-riven, wind-blasted old pine tree in cool comfort.

The breezes that swirled around the stark cliff face would flow in under the tree when the air needed stirring. Hubert began to believe that he could call them at need. He even came to recognize one of them. He named it Wilfred. And after his interest in the battered and split old tree became plain, the winds never blew hard against it. Somehow, it never again bore the brunt of the mountain storms.

Across the tundra meadow, millions of little short-stemmed flowers bloomed; and these brought the butterflies. At first they were widely scattered. Then they began to flock, rolling along over the flower fields in multicolored clouds. Hubert found them as interesting as anything on the mountain. He began to feed them.

Barney, the waterfall, was simply a part, a segment of the stream, which in turn got its water from the many little trickles from the snowfields high on the mountainside, and from deep springs gushing out of the rocks. These in turn owed their existence to the mountain itself. Without the water, the mountain would have been lifeless, barren. It took all things working together to make it the busy place

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that it was.

Hubert was a poet. Now everybody knows that this is not much of an occupation. Very few people ever get rich at it. A good many have come pretty close to starving. Maybe some have. But Hubert was not that kind of poet. With him, poetry was not so much an occupation as an excuse. Hubert didn't write poetry so much as live it. And somehow, he had found that he fitted there on the mountainside.

He was only there in the summer. Nobody knew where he spent the long months of winter, which probably was just as well. For in the winter Hubert had a job, and watched television and went to ball games and was pretty much like anybody else. But with the spring he began to get restless. More and more he thought of the mountainside, and the good air, and the pleasant breeze off the snowfields. When he reached a certain stage he quit his job, packed up his gear; and before long someone in the little town in the valley would report:

"Spring's back on the mountain. Hubert's put up his lean-to by the waterfall, and is settin' up there writin' his damned verses."

It was somewhat like the swallows coming back to Capistrano.

The ranchers of the area had given up using the mountainside for grazing. Sheep herders had tried, years before, but there was so much larkspur and loco growing up there that more sheep died than got fat. The bighorn sheep of the crags had more sense, and got along fine. So the mountain was pretty much sufficient to itself, and more and more Hubert was a part of it.

Hubert bought supplies in the town. They were not very different from what anybody else would have bought. Not too much at a time, either, for he had to pack everything up to his camp on his back. But one day his order attracted attention.

"Now why," the storekeeper speculated, "would he want ten pounds of sugar? A pound of tea will last him half the summer. I doubt if he bakes cakes. What else would he use it for?"

"Maybe he likes something stronger than tea," a farmer said. "Maybe he likes to make his own. You know as well as I do he don't jest set up there on the rocks and write po'try."

"He's not going to make enough hard stuff to bother about with just ten pounds of sugar," the storekeeper said. "He wouldn't eat or drink it all himself, either. No, he's doing something else with it."

"He don't do no harm, I reckon," the farmer said. "Jest squats up there and takes his ease. Sort of simple, I guess."

"Hubert ain't simple," the storekeeper objected. "He knows when

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to come and when to leave. And he's got money. Doesn't need much, but when he wants something, he buys it. Pays cash, too. Never asks for credit. Don't say much, either. Just buys his stuff and goes back up the mountain."

So, without intending to, or even giving it a thought, Hubert began to attract more attention. It became harder and harder for him to have space and time to himself; harder and harder just to mind his own business.

For a while that summer, people came up the long slope, especially on Sundays. Hubert didn't welcome them, but there was nothing much he could do. After all, it wasn't his mountain. So he simply sat under the old pine, and whenever anyone was around he would look off into the distance and then scribble in his little notebook. When anyone badgered him with questions, Hubert would read his verses to them. That usually sent them off pretty promptly, for Hubert didn't read his better verses. To most, what he read made no sense at all. And that was the way Hubert wanted it.

But folks did find out what he was doing with the sugar. It didn't help Hubert's image any. There was more talk about him in the store in the valley.

"You say he ain't simple," the same farmer said to the storekeeper. "You heard what he's usin' all that sugar for? He's feedin' butterflies!"

"I'll hear who saw him doing it," the storekeeper said, "and then I'll make up my mind."

"Willie Thatcher seen him. Willie laid up there behind rocks and watched him for half a day. He said the butterflies swarmed around Hubert like feedin' chickens. Said he'd call them and they'd come."

The storekeeper considered this.

"Whatever Hubert is or isn't, I *know* Willie's simple," he said. "Still, I guess he wouldn't make up something like that. He ain't got sense enough."

Willie's reporting was just what he had seen. Hubert was indeed feeding the butterflies. He had always enjoyed them, especially when the tundra was in best bloom. Then they were plentiful, many kinds drifting across the high meadow. He got the idea when he saw three or four clinging to the edge of his tea mug, which still had wet sugar in the bottom. He watched them quietly us they unrolled their long tubular siphons and drew up the sweet fluid.

"Like sweetening, do you?" he said. "Of course you do. That's what you get from the flowers. Well, maybe I can manufacture more."

He dissolved a couple of spoonfuls of sugar in water, then crushed

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a few flowers of nearby polemonium and bluebells and dropped them in. He poured the mixture into several tins and jar tops.

"You each probably have your favorites," he said. "There's something in this for everybody."

So he set the containers about on rocks and among the growing flowers. He soon began to have customers. The butterflies approved the fluid, and before the morning was gone they had drunk it all.

Hubert wasn't sure when the insects began to connect the goodies with the source, but before long there was no doubt that they did. He would have his shower, prepare his breakfast and mix a batch of nectar. When the rocky slope brightened and the air warmed, the butterflies would come drifting toward him across the sun-drenched field. And every day there were more of them. His regular supply of sugar went down rapidly. That was when he had bought the ten pounds.

Willie was right when he reported that Hubert talked to the butterflies. If he had had the imagination to understand, he would have realized that Hubert talked to everything. Further, he would have known that Hubert didn't regard the conversations as one-way streets. Hubert didn't just talk. He conversed. He got answers.

There was the waterfall. Especially there was the waterfall. Hubert had talked to the waterfall for years. It was his oldest friend. From it he first began to get answers.

When he had set up his first lean-to, Hubert had put it near the waterfall on whim. He liked the sound of the water, and the pool below it was clear and pure. Hubert thought that the best water on the mountain came from that pool.

The waterfall was Hubert's shower bath from the beginning. At first it had been only an idea, for the water was straight from the snowfields above, and if Hubert had stood under it for even a minute he would have grown brittle. Still, he had a touch of Spartan in his makeup, and he found a dash under and out exhilerating. With clicking teeth he would towel himself dry, then run to the nearest sunny patch to warm up.

Then he began to talk to the fall. To make things more personal, more man to man, he had already named it Barney.

"Barney, you are a fine waterfall; and I approve of you. Wouldn't camp anywhere else on the mountain. But man, you are one cold proposition. I suppose you couldn't be anything else, considering the source of your water. It would be nice, though, if you could sort of take the chill off for a few minutes in the morning. Just long enough for my shower, you understand."

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It was a whimsy that amused him, for each morning, when he first stuck a tentative hand into the icy fall he'd say, "Warming up any, Barney? Work on it, boy! You could do it if you'd try!" And he'd fancy that a ripple, a pulse, would go across the face of the waterfall. Then it would resume its steady flow.

One morning he got a more positive response. He stood shivering, at once dreading and anticipating his dash, and reached out his hand as he usually did. The waterfall beat him to it. The smooth sheet of water shifted suddenly and a rock in the ledge, usually submerged, diverted a jet of icy spray onto Hubert's naked body. His howl at the sudden dowsing could have been heard halfway down the mountain, if anyone had been there to listen.

He reached for his towel and looked closely at the again smoothly flowing water. Nothing showed that could have caused the spray.

"Doggone you, Barney, I believe you did that on purpose!"

The waterfall was a glistening sheet, slipping gently into the pool at its foot. It showed no change.

"If you did it once, you can do it again," Hubert said. "Come on," he coaxed, "just once more."

Taking no chances, he moved back out of range. And, after a moment, the waterfall complied. It shifted, and again the jet of water broke into spray.

"Good!" Hubert cried. "Bravo! Now, if you could just manage a little warmer water when I need it—" He broke off, chuckling. "I won't hold my breath," he said, "but it *would* be nice."

He thought about it during the morning, off and on, while he fed the butterflies; made his usual hike to the pinnacle of the mountain; and finally, when the sun grew hot in the open, came back to his favorite shaded resting place under the lightning-blasted old pine. It was there that he wrote most of his poetry. He thought he might write some verses about Barney, after the morning's episode, but his muse had taken the day off, and he wrote nothing worth keeping.

"Poetry, George, is something you can't rush. It's either ready or it isn't."

You might have looked around for George, before you realized that Hubert was speaking to the pine tree.

"Most of the poetry I write here probably isn't mine," Hubert went on. "You've lived a long, rough life, and have seen a lot of changes up here. There's good poetry in your memories. I suspect that I'm just writing 'em down, and you're doing the dictating. I'll almost feel dishonest publishing under my own name, but I can't think of

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any good way to give you credit. If I said that my poems were really written by George, folks might think I was a little peculiar."

Hubert stretched out on the soft pine needle mat and closed his eyes.

"No sir," he murmured, "you can't rush poetry."

So he didn't try. Instead he took his usual nap, while the shade shifted as the sun moved. Many of the sparse branches of old George were already dead, and George himself seemed destined soon to follow them. As Hubert had said, George had had a long, eventful life. And it was almost over.

When the sunlight eased onto Hubert's face, he woke and moved. From the snowfields farther up the mountain a cool breeze came drifting down. It barely stirred the tops of the short-stemmed flowers of the mountain meadow, and thousands of butterflies clung and fed as the blossoms swayed. Hubert sniffed the freshness with pleasure.

"Thanks, Wilfred," he said to the breeze. "You're almost as dependable as Barney, in your way. And you always blow best in the afternoon, when things get hottest. Very comfortable."

As can be seen, even when there were no people on the mountain, Hubert had plenty of company and did his share of talking during each day. In fact, he often spoke to the mountain itself, and had reason to believe he was listened to. Or at least the reasons seemed satisfying to him. The mountain had a rather commonplace name to the makers of maps, but Hubert called it Mohamet.

"Once, I remember, Mohamet would not come to the mountain," Hubert reflected, "but if Mohamet *is* the mountain we at least won't have that kind of confusion. So unless you object, you are Mohamet."

Sensing no opposition, Hubert often used the name, and found it more personal than just speaking of "the mountain." Like Barney and Wilfred, Mohamet got his share of Hubert's conversations and had a poem written about him. Hubert read it to him one afternoon, and the response seemed favorable. Whether the poem had anything to do with Hubert finding the coin will never be known, of course. But the events were suspiciously close together.

He saw the dull yellow shine down among the rocks as he was clambering over a newly deposited pile of talus at the foot of the high cliff above the meadow. The rock faces were always weathering, cracking, and occasionally large pieces would break away and fall. Hubert fished the coin out of the crevice and examined it with interest.

"Now where could this have come from?"

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It was crudely minted, by modern standards, but it was not worn. And it was heavy. That, and the yellow color, told Hubert what he had.

"Gold." Hubert studied the unfamiliar face of the coin. The words around the edge were not English. "Spanish, I'd guess. Maybe Portuguese."

He considered.

"That figures. If it has been here a long time, it might even be a coinage the conquistadors used. Maybe the storekeeper would know something about it."

When he thought it over, though, he realized that to mention or show it to the storekeeper might not be a good idea. The storekeeper meant well, but he'd never keep such information to himself. He dispensed more than food and commodities. He passed on the news. And nobody would believe that this was the only coin Hubert had found. The mountain might even be overrun with treasure seekers. Hubert certainly didn't want that.

So he stowed the coin away in his pocket and decided to say nothing. Someone could tell him what it was, after he had left the mountain and had had time to make up a story of how he came by it. He did search the talus slope, but there was only the one coin. No sign, either, of where it had come from.

Finally, as he went back to camp, he spoke to the mountain:

"Well, Mohamet, it looks like you are the only one who could tell how this thing got here. This is one of the times when it would be handy if you could speak up."

But, not unexpectedly, Mohamet said nothing. He simply lay, vast and inscrutable in the late afternoon sun, while Wilfred blew cool across the meadow and Barney murmured in the distance. George cast a long shadow. The butterflies were hanging themselves under leaves and in crevices for the night. Only a nighthawk still boomed in the sky overhead.

Hubert did not dwell on the mystery of the coin. In fact, after a couple of days he forgot about it. It lay in his pocket, mingled with other coins, a pocket knife, and various odds and ends that he picked up as he prowled the mountain. When his pockets grew overfull, as they did every week or so, Hubert sorted out the contents and started over.

But the sorting hadn't taken place when he made a quick trip down to the town for some trifling supplies. Among other things, he bought a new notebook and, as an afterthought, five more pounds of sugar. As usual, he fumbled in the rubbish in his pockets for

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change, finally dumping the whole handful on the counter. The gold coin rolled free and came to a stop in front of the storekeeper, who picked it up and looked at it curiously.

"I bet you never know what's liable to come out of your pocket," he said. "Where did you get this?"

Hubert hesitated, and he knew the storekeeper saw it. But he recovered quickly.

"Good luck piece," he said easily. "Found it last summer down on the trail east of town. No idea where it came from."

There were several men nearby, loafing and listening, so the storekeeper followed Hubert's lead.

"Purty thing," he said as he handed it back. "Wouldn't give you a lead nickel for it, though. Looks like play money."

He finished bagging Hubert's purchases, and no more was said. But when Hubert was gone, one of the farmers said:

"That wasn't no play money. That was a gold piece."

The storekeeper nodded.

"Real old. An old Spanish *pistole,* looked like, but I haven't seen one for a long time. Anyhow it was heavy. Good gold."

"Where you reckon he got it?"

"You heard him. Could be just like he said. Them poet fellers don't care nothing about money. He never knows what he has in his pocket. To him it's just a good luck piece."

Another onlooker, dark, dirty, and narrowfaced, asked:

"If a feller's a poet, does that mean he's a fool?"

The storekeeper grinned.

"Usually," he said.

"You don't think Hubert's a fool," the farmer said. "I've heard you take up for him."

"That's so," the storekeeper admitted, "but he does do funny things. You saw he bought more sugar. Willie Thatcher says he feeds the butterflies with it. And Willie says he's always talking when there's not anybody there."

"Well, Willie's no improvement," the farmer said. "He's simple. He just wants to be noticed."

"Too simple to make things up," the storekeeper said. He had expressed that point of view before.

That would have seemed to be that, but, as it turned out, it wasn't. The dark onlooker had a pal; and later, if anyone had bothered to notice, they might have been seen conferring together seriously.

"He's lived up there four, five years," the dark one said. "Jest during the spring-summer months. An' the storekeeper says he's no

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fool. So—he knows something. He's been looking for something. But I don't think he's looking no more. That gold piece tells me he's found what he was looking for."

"There might be gold up there," the other man said. He was small, wiry, with a long nose and little rat-like eyes. "I've heered that the Indians used to get turquoise there, too. But I'm damned if I think the mountain is minting its own gold!"

"You know what I mean," the dark man said impatiently. "He's been looking for a cache. Somebody left money hidden up there, maybe a hundred years ago. He found a map or a letter or something that told him where to look."

"Fairy tales," said the little man. "Treasure stories are as common as horse apples all through these hills. But I never heered of anybody finding old Spanish money like the feller's gold piece."

"A first time is as good as any. It sure wouldn't hurt to pay him a visit, would it? He don't own the mountain. Maybe we'd like a little vacation camping trip ourselves."

"I could use a change," the small man agreed.

"Maybe he'd like to go treasure huntin' with us on shares. Three can cover more ground than one."

"What kind of shares did you have in mind?"

"Half fer me, half fer you, none fer him."

"That sounds fair," the small man said.

Meanwhile Hubert had had a pleasant week. There were several new developments to give variety to existence. More and more butterflies flitted and wavered over the high meadow. There were kinds Hubert had never known to be there before. Every day he could see them coming, drifting up the stream valley below the waterfall, riding the breezes through the high pass above the snowfields. Each morning he put out more sugar water. By noon it was gone.

Even more satisfying, he had finally reached an understanding with Barney. For most of this summer he had noticed that the shower water didn't seem as cold as he remembered it from past years. When the water fall splashed him playfully, as it often did, the temperature was quite tolerable. Yet he knew that the water came from the snowfields, as it always had.

"Barney," Hubert said, "I believe you're getting the idea. Now when I get under the flow, try harder. I only need warm water for a couple of minutes. Then you can go back to cold. We don't want to inconvenience the trout in the pool."

He studied the waterfall while he removed his pajamas. (If it had been known that Hubert slept in pajamas, that would have finished

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him.) Often he had imagined a little ripple across the face of the fall when he talked to it. This time, there was no doubt at all. A pulse ran from one side to the other of the smooth sheet of water. Barney understood.

Hubert stepped confidently under the fall from his favorite flat rock. Somehow, he knew what to expect. The water was warm.

"Ah-h!" Hubert turned and luxuriated in the tepid flow. "Could you warm it just a bit more? To loosen the dirt, you know." And he wasn't surprised when the water grew almost hot.

"That's good. Now back to cold. Closes the pores. The sauna effect."

Barney complied, and Hubert shot from under the fall with a yell.

"Easy!" he shivered. "I can see we're going to have tc practice that."

But when he toweled himself dry, he had never felt so good.

Several days later the jeep came chugging up the slope. Hubert always went down the mountain by following the stream, and lower down a trail through what was left of a strip of forest. But there was an old logging road that was passable up to the edge of the timber, and from there, if you had four-wheel drive and no regard for your vehicle, you could drive as far as the alpine meadow. Hubert had never known anyone to try it, though.

"Man, that was a rough trip!" the jeep driver said. He was dark, with a narrow face, and looked like he could have used a bath. "Worth it, though," he added, and tried to seem appreciative.

Hubert walked over from where he had been lying in George's shade. Wilfred obligingly blew the man's odor in another direction.

"You could have walked up," Hubert said. "It's quicker and easier."

He wasn't enchanted with the idea of visitors. Especially not these visitors. The little rat-like eyes of the jeep passenger did not inspire confidence, and he knew he had seen the driver somewhere before. When Wilfred slacked off for a minute and the smell reached him, he remembered where.

"We brung our camping stuff," the man explained. "Expect to be up here a week or so. Do some climbin', fishin', maybe even some treasure huntin'."

He watched Hubert carefully when he mentioned treasure, but Hubert only smiled.

"I've been up here several summers, and I never heard of any treasure. But there *are* treasures here that the poet can use. Sights. Sounds. Odors. That's what I do, you know. I write verses."

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"Yeah, we heard." It was little Rat-eyes. "Business good, I reckon."

"It has been a good summer," Hubert said, and mentally added, "up to now."

"We won't bother you none," the little man said. "Where're you camped?"

"In the little canyon over there, below the waterfall. Doesn't get so chilly at night. Sheltered, you might say."

"Noisy, ain't it? All that water splashin'."

"I'm used to it," Hubert said. "I'd miss it. And it's handy for bathing. The waterfall's a good shower. You're welcome to camp down below me."

"Yeah," the dark man said, "we might do that. I ain't had my bath this month. I might try your shower."

They drove on over to the lip of the stream bed, and later Hubert could hear the sound of an axe as they cut tent poles.

"George," Hubert said, "if I weren't lying here, I bet they'd use you for firewood."

Naturally, he expected no response; but a vagrant breeze, perhaps related to Wilfred though coming from another direction, loosened one of George's dead limbs; and it fell with a crash.

"I know how you feel," said Hubert.

He saw nothing more of his neighbors for the rest of the day. They had put up an old patched canvas tent and carried a couple of blanket rolls inside. Then they had set off across the meadow to the cliff. They spent the afternoon searching along its base, prowling the talus piles, working harder than Hubert had expected they would. He shook his head. He knew now what they were looking for.

He had finished his meal and the stars were out before they came back to their camp. He heard them blundering about and swearing as they started a fire and cooked their supper. He was glad they had set up a couple of hundred feet down the stream. They'd be less likely to want to visit. Hubert preferred the noise of the waterfall.

He didn't sleep as well as he usually did, but he didn't expect any immediate trouble. He felt pretty sure that there would be some later, and he tried to imagine what form it might take. By the time day broke he was ready for his shower. His thoughts also ran to a bracing mug of tea, and bacon and biscuits, with maybe some butter and honey.

The shower was perfect. Barney got the temperature just right and Hubert stayed under longer than he usually did. When he came out in a hurry from the final cold surge, he saw that he had company. His neighbors had been watching him.

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"Now that looks like fun," the dark man said. "Ain't it cold? This damn' creek's like ice."

Hubert toweled vigorously.

"Just exactly right," he said.

The dark man began to remove his clothes. Hubert couldn't remember seeing anybody who was dirty under his clothes before. The stench of him was plain, even on a crisp mountain morning.

"Barney," Hubert muttered, "use your own judgement!"

The man extended a tentative hand into the fall.

"By damn, it ain't cold. I wouldn't 'a believed it."

He stepped confidently under the sheet of water and the next instant his howl of agony ripped down the canyon as he emerged as if shot from a gun.

"I'm scalded! I'm burning! Oh God, I'm ruined!"

He seemed to realize that he was knee-deep in ice water; and he lay down and rolled, while Rat-eyes watched him in blank astonishment and Hubert turned his back so that his face was hidden. He could find no fault at all with Barney's judgement.

After a couple of minutes the man came shivering to the stream bank. Already great blisters were beginning to rise on his shoulders. His chest and arms, and even his legs, were streaked and reddened. He glared at Hubert.

"That water's boilin'! What'd you do to it?"

Hubert's look of surprise wasn't entirely faked. He had never known Barney to be really hot before.

"Me? You're crazy! I can't heat the water in a waterfall. I just came out, and it felt fine to me."

He walked across his flat rock and thrust his hand into the fall. Rat-eyes followed him.

"It's not hot to me," Hubert reported. "On the cold side, if anything."

Rat-eyes tested gingerly, with one finger.

"Damn cold," he said. "Icy. I wouldn't git under there. I'd freeze to death."

The narrow-faced man tenderly touched his blistered shoulders.

"What do you think these is, chill bumps?"

"I think," said Rat-eyes, "that you jest ain't used to water."

The scalded man picked up his reeking clothes, and the two of them went back downstream to their camp. Hubert could hear the mumble of their voices as they retreated, and once the dark man looked back at him in a way that wasn't exactly friendly. But Hubert didn't see how they could connect him with the waterfall's changing

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temperatures. He didn't see how, but he knew they would. In spite of that, he felt satisfied.

"Nice going, Barney," he said. "Very nice going."

And the waterfall rippled slightly across its smoothly flowing face.

After his breakfast, which he enjoyed even more than usual, Hubert made up the morning's ration of sugar water and went out to distribute it. The sun was beginning to be warm on the alpine meadow. The butterflies were astir. Wilfred blew gently close to the ground, and the insects drifted along in colorful swarms. Hubert filled all his dishes and jar tops, then spent half an hour sprinkling the left-over nectar onto flower clusters and especially shiny leaves. Wherever he went the butterflies swirled around him, alighting in his hair, clinging to his clothing, his hands and the rim of the nectar bucket. He walked slowly along, an upright, shifting, rippling rainbow, a living, moving pillar of brightness.

"Now boys," Hubert told them, and then added "and girls," to be in compliance with woman's lib, "this is it. No more until tomorrow. Go on out and make your own livings. This is all I can afford."

He told them that every morning now, and they always responded. Gradually they began to drift away, spreading out over the whole mountainside, hovering or clinging briefly wherever a flower bloomed.

"Mohamet," Hubert said, "you're really dressed up in the summertime. Glad I can help."

Naturally he got no response from the mountain, but it seemed proper to make a remark to it now and then. In the strange way of thinking that poets have, he felt that Mohamet appreciated it.

For the next two days Hubert saw little of his neighbors. They didn't come to his camp again, and there were certainly no further attempts at bathing. They prowled all over the mountain. Occasionally he saw them high among the rocks, probing into crevices, going in and out of the little shallow caves they discovered. Hubert knew that they watched him, too, but this was no more productive than the prowling. The ways that he spent his time were no secrets, and he suspected that they made very little sense to the watchers.

So Hubert fed his butterflies, lounged in George's shadow and scribbled in his notebook, took his nap while Wilfred tempered the afternoon heat of the rocks with a cool breath from the snowfields. And from this nap, on the second day, he woke to find the treasure hunters beside him.

The dark man was staring down at him. He didn't look friendly. This impression was reinforced by a stubby little black bulldog re-

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volver that he held in his hand.

"Our patience has done give out," he said. "Now it looks like you're goin' to have to show us where it is."

Hubert knew he had problems, so he stalled in the usual way.

"If you would tell me what you're talking about, it would help. And you can put down that gun. I don't have one, and there are two of you."

"I'll just keep it handy," the man said. The scalding hadn't done away with his odor, and anyway he was wearing the same clothes. "You know what our interest is. Money. Old money. We ain't fools. We know you been huntin' treasure up here in these rocks. An' we know you've found it. Now you're jest foolin' around until you can git it out."

"Ah," Hubert said. "The gold piece I had in the store." He looked thoughtful. "That is suspicious, all right. But if I have found a cache of coins, isn't it mine? Where do you come in?"

"We're your partners," little Rat-eyes said. "We all found it. An' your cut is gettin' smaller every minute."

Hubert sighed, but his mind was groping frantically for an idea. He knew that this was real danger. Poetry and smart talk wouldn't help a bit. These two characters wouldn't understand either one.

"May I sit up? I think better when my head is higher than my heels."

"Jest think where the money is. That won't be hard."

Hubert propped his back against George's trunk, moving slowly so the man with the gun wouldn't get the wrong idea.

"I almost wish I knew," he said. "It would save a lot of trouble. But the plain fact is that I just found that one coin. I admit I found it up here—in the rocks below the cliff. My idea is that someone lost it, somebody climbing up here, somebody going through." He shrugged his shoulders. "Believe it or not, that's all I know. I'm not interested in treasure hunting."

"Okay, we don't believe it," the little man said. "Your head is up, but you still ain't thinkin' hard enough. What you need is time."

He had come prepared. He took several feet of small pliable pigging rope, like that used to tie calves' legs in roping contests, and tied Hubert's hands behind him. He did it expertly. Then with another piece he hobbled Hubert's ankles, so that he could walk with a six-inch stride.

"You like it here under this old tree, so you can jest stay here a while. But maybe we better fix it so you won't wander off."

He shook out a coil of quarter-inch rope, passed the end of it

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through Hubert's legs and up across one shoulder, and tied it securely behind Hubert's back. Then he tied the other end of the rope around the trunk of the old pine.

"A fifteen-foot stake-out," he said with satisfaction. "You won't need no more, since you ain't grazin'. Come to think of it, you *might* be grazin', unless you think up where that money's at."

The little rat eyes glittered at him, and Hubert thought what a fitting comparison it was. He hated rats.

"One more thing," the little man said. "Don't yell. If we have to put a gag in your mouth, you won't even be able to graze."

"I'd be wasting my breath," Hubert said. "There's nobody to hear me."

"Yeah," the dark man said. "That makes it nice."

They went back across the meadow, past the jeep parked on the rim of the stream bed, and down out of sight toward their camp.

"Well, George," Hubert said, "this is what I'd have to call a real mess. I hate to think of the ransacking they're giving my camp right now. Any idea you may have will be gratefully received."

George didn't seem to have any, for his few live branches hung motionless in the still afternoon air. Wilfred barely whis 114 past, close to the ground. Hubert experimented with the limited stride the hobble allowed, and found that it did exactly what it was meant to do. The little man knew his ropes. So Hubert finally eased himself down the trunk of the pine, and, in awkward comfort, sat thinking.

After half an hour, the men appeared again. Hubert saw that they were loading the jeep.

"That figures," he said. "Whether I cough up a treasure or not, they're blown. They'll have to move out. The interesting thing is what they plan for me before they leave. Interesting to me, anyway. Because I sure can't show them any gold."

Since he could do nothing else, Hubert watched them. He did work himself to his feet again, and walk with hobbled steps to the end of his tether. And he began to feel a strange undercurrent, as though forces all around him were gearing up for action. Even old George's scanty foliage ceased to hang limply. The branches trembled in an as yet scarcely perceptible breeze.

Across the wide sunny slope the butterflies were drifting, and Hubert suddenly realized that they were all moving in the same direction. They were gathering in clouds. The jeep's motor started. The vehicle backed, swung around and headed for the pine tree, the dark man at the wheel. Butterflies began to plaster themselves

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against the windshield. They swarmed around the passengers, fluttering and crawling over everything. The driver held the wheel with one hand and brushed away insects with the other.

"Bat 'em out of here!" he growled. "I can't see to drive. Damn' bugs have gone crazy!"

The little man beat about him with his cap, but the jeep slowed almost to a crawl. After all, the mountainside, even the meadow, was covered with rocks. It would be easy to wreck the car. And they expected to leave the country in it, after the showdown with Hubert.

"If he don't tell us nothin', what'll we do with him?"

"Leave him there," the dark man said. "He can get loose. It'll jest take him a while."

"When I tie 'em, they don't get loose," Rat-eyes said. "An' when he dies, they're liable to call it murder." He brushed again at the butterflies, as another cloud descended on the jeep.

"He can't tell nobody nothin' if he's dead. Anyhow, he'll be dead because he's too dumb to get loose. That won't be our fault." The dark man fought butterflies, crushing fragile bodies and smearing the windshield. "What's the matter with these bugs?"

"Maybe he's doin' it," the little man said. "He feeds 'em."

"That don't make no sense. Nobody can tell bugs what to do."

And in truth Hubert was as surprised as anybody as he watched the approaching jeep, covered with butterflies. He could see the men brushing and striking at them. It was only a hundred feet away when the whole mountainside seemed to shudder. The jeep squealed to a halt.

"My God," he heard the driver yell, "earthquake!"

"Step on it!" the little man urged. "Straight ahead! If we can git to the loggin' road we can make it out of here!"

The jeep leaped forward, and another cloud of butterflies enveloped it. The mountain rocked again. The earth made a tearing, ripping sound. Hubert turned as he felt his rope pull. Old George was swaying slowly, and from his base a long fissure ran, tearing his ancient weakened roots, loosening the grip that had held him aloft for hundreds of years.

"Stop!" the little man howled. "Look out fer the tree!"

George seemed to fall in slow motion. His mighty length settled almost gently directly in the path of the jeep, then the sound of the crash blasted in all directions, and leaped and ricocheted from the cliff and all the rock faces about.

Hubert was reasonably sure he was dead. The men in the jeep

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were probably of the same opinion, for they took no time to look. With George's shattered carcass blocking their way, they were frantic.

"Go around it!" the little man directed. "Go around the top end. They's a clear space up close to the cliff. You can git through."

Hubert realized that if he were dead he wouldn't be watching. He had been knocked flat by the crash, but he felt no pain. He rolled to a sitting position, and then to his feet. He was still tied up, but he was free of George. The splitting of the huge half-rotted bole had snapped the rope tied around it like a piece of twine. Hubert hopped away from the shambles of broken pieces and splinters, dragging his rope behind him.

The jeep was making slow but steady progress. George had fallen across the clearest route, but the driver was picking his way skillfully around rubble and between boulders. Though the jeep bounced and skewed, it kept going. Even in his present uncomfortable position, Hubert admired the driving.

And he noticed something. The butterflies were no longer harassing the jeep. They were leaving. The colorful clouds streamed away. Probably only the crushed and dying remained as the little car swung closest to the cliff. Then, for the third time, the mountain rumbled and shook.

For a moment the meadow seemed to move horizontally, then to snap back again. The prone body of old George did a half roll, and Hubert could hear the crackling as dry branches snapped. Hubert himself was thrown from his unstable, hobbled feet. Small rocks pattered past. Big boulders swayed in place. And a whole section of the cliff face ripped away and fell.

Hubert saw it all. He lay for a brief while, bruised and stunned. Then slowly he rolled to a sitting position. He did not feel the pain of a broken finger, smashed against a little outcrop when he fell. He could not tear his unbelieving eyes from what had happened at the cliff base.

The jeep was gone. Where it had been a long ridge of shattered rock lay piled, and the cliff showed a bright new face to the still high sun. After the cracking roar of the breakaway, the silence seemed uncannily complete. Only a small whisper stirred the tops of the mountain flowers. It was Wilfred, making his way softly down from the cool, undisturbed snowfields. The breeze seemed to swirl uncertainly where the old pine had always stood, then moved on down the mountainside.

Hubert knew what he had to do, and he did it. Fortunately for

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him and for this story, he knew how. He lay on his side, rolled himself into a curled, fetal ball. His hands, bound behind his back, he drew down over his buttocks, down his thighs, and then, with tearing pain, he drew his feet through the loop. It can be done. Try it.

His hands were now in front of him, but they were still expertly tied. With his teeth he quickly remedied that. And there was no doubt in his mind, as he chewed away, that the rope had previously been used to tie calves. It was not until he bent to release the hobbles that he noticed his broken finger.

By the time he was free and had worked the stiffness from his abused body, the finger was clamoring for attention. It would have to be set, and that meant a five-mile trek down the steep trail to the village. But before he could go, Hubert knew he must make sure, though he *was* sure, that the jeep had been swallowed up by the rock fall.

After a quick hike across the meadow and a clamber over the newly formed ridge, he was sure. The jeep and its passengers lay deep under thousands of tons of stone. There was no evidence that they had ever existed.

As he climbed down over the sharply fractured edges of the piled stones, Hubert thought deeply.

"What should I report?" he asked himself. "Who knows they were here? Who will miss them? It would take heavy machinery even to reach the bodies, and I doubt if they have any grieving relatives waiting for them to come home. And they certainly couldn't have a finer tomb."

He left the ridge and skirted an old weathered rock pile which, he realized, must have been formed by another breakaway fall, caused by some earthquake back in the mountain's history. It had been disarranged and shifted by the tremors just past. And in a crevice Hubert's eye caught a gleam of yellow, as a ray of sun probed among the rocks. With sudden curiosity he clambered over to look.

In spite of his finger, it was easy to pull back some of the loosened stones. The gold was there, two bursted and rotting leather bags of it, bright old coins spilling into niches and over the bones that also lay there. There were two skulls. The man's had been partly crushed, and the long jaw showed yellow, decayed teeth. The horse's skull was large and strong, the teeth unworn. And their bones mingled among the shattered stones and the gold pieces.

"He almost made it," Hubert said. "An old man on a young strong

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horse." He stood for minutes looking down into the deep crevice. His finger throbbed. It would take a lot of work to enlarge the opening until he could lower himself into the space far enough to reach any of the money. He could see that many of the coins were identical to his good luck piece.

"Well," he told himself, "I'm rich—I think. Or am I?"

He looked again at the bones.

"It didn't do him an awful lot of good," he said, "whether he stole it or not, which I suspect he did."

He glanced back at the ridge of newly fractured stone.

"They came close, and there was no doubt of their intentions, either. But their luck was just about equal to his."

He shook his head.

"I just don't know. No telling how long he and his gold have been there—and I've gotten along pretty well without it. These have been good summers. If I hauled that stuff out of there, the mountain would be overrun with treasure hunters. No peace at all. Good-bye poetry. They'd use rock-moving equipment. Probably find the jeep. And maybe more rocks would fall—on them. For somehow I don't think Mohamet takes kindly to such goings-on. But I do think he has offered the gold to me."

For another moment Hubert forgot the increasing pain of his finger, as his gaze roved the pleasant mountain meadow, swept the higher snowfields and the spires and crags that lay above them. Faintly the steady murmur of the waterfall came to him. Wilfred whispered along the cliff base.

Hubert began to roll the largest stones he could move, across and into the narrow crevice. In a few minutes no eyes could have suspected that anything lay buried there.

"If it's my treasure," Hubert said, "I can do what I please with it."

He rolled a last stone.

"Mohamet," he said, "you play rough, and you play for keeps. So thank you kindly, but no thanks. I'll just hang on to my good luck piece. And maybe some day I'll make an epic poem about all this."

He turned to clamber down the rock pile. His broken finger spasmed with pain.

"I'd better get on down the hill and get this fixed," he said. "Don't want it stiff. That's one of my writing fingers."

A butterfly drifted past, then came back to make a quick circle around Hubert's head. He grinned at it gratefully.

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"I'd have had to go down before long anyhow. I'm almost out of sugar!"

GLITTERBUG

Electronically speaking, a glitch
Is somewhat akin to a witch,
  Except that most witches
  Zap broomsticks, not switches.
And that's how to tell which is witch!

— Argus

SOLUTION TO WEIRD NUMBERS FROM TITAN (from page 43)

The doubly-weird number sequence, with its first two rows of differences, begins:

1 3 9 20 38 64 100 . . .
2 6 11 18 26 36 . . .
4 5 7 8 10 . . .

Is there a triply-weird sequence? More precisely, is there a sequence of increasing natural numbers, with three rows of increasing differences, and an increasing "leading edge" of first numbers for the four rows, that contains all the counting numbers without duplication? The answer is on page 76.

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A SAILOR'S DELIGHT

by Ralph Roberts
art: Jack Gaughan

Although Mr. Roberts has sold other pieces, this is his first sale to an SF magazine. At 33, he's the sole support of three cats and a computer, which last he uses as a word processor to write with instead of a typewriter. He lives in the Blue Ridge Mountains of western North Carolina (Northwest Carolina?), and has the radio call sign WA4NUO.

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"C'mon, baby," Barski said while leaning close so she could be heard above the boisterous noise of the crowded spaceport bar. "Let's me and you blow this joint. Ya got a place?"

Mark Almond pulled himself away from Barski's clutching hands. "Yeah," he told the burly spacesailor, "I got a room down the street but we haven't settled anything yet. And quit groping me!"

"Space farbles!" Barski growled. "Now we both know you're peddling it; name a price and get on with the program. I done bought you three drinks, and ya best not be one of those barboys who just cadge drinks. I can drink anytime, tightpants." She leered and let her eyes rove over Mark's form-hugging yellow and black outfit. He was tall, lean, and handsome—she appeared pleased and excited by what she saw. "We been six months out to Sirius and back; me and the girls are ready to roar. Ya wanta talk business or not? Babe, I ain't got all night." Her eyes continued to strip the clothes from his body.

Mark sighed and looked over Barski. She was big and muscular like most space crew tended to be. Her arms strengthened by tossing heavy power rods around, he surmised, since she wore the green coveralls of a powerperson. He smiled and pretended rapt attention to her drunken mutterings; after all a guy had to eat. Lord knows just that was hard enough these days. At least, he thought, she had rather prominent forecastles for a sailor and, like all of them, just one thing on her mind while in port. He kept smiling but wished that, just once, one of them would treat him with a little respect.

Barski pinched him. "What's it gonna be, snakehips?"

Mark glanced around the smoky, dimly-lit bar. It was crammed full of swaggering, hard-drinking women, fresh off starships and looked for a good time to help forget the loneliness and hard work of interstellar voyages. Most of the women had each already picked one of the colorfully dressed, carefully groomed men and was plying him with drinks. Couples were already starting to drift out—the spacesailors proud of their catches and winking lewdly at shipmates, the men demure and mentally counting the money they would earn that night in some sleazy, dirty-sheeted hotel room. Mark sighed again. He didn't see any other green coveralls, and he did want to talk to a powerperson. He hoped that the burly Barski would be gentle with him, but you had to take risks in this trade.

Barski took a long swig on her drink and slammed the hefty glass on the bartop. "Well?" she asked impatiently.

"All right," Mark said softly. "Forty credits for a short time, hundred credits for all night. Anything kinky is extra and you gotta

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talk to me about engine phase alignment."

"I'll take all night, gotta lot of catching up to do," Barski said with a laugh. "But, what's this deal about engines, ya ain't planning on a space voyage are ya?" She almost fell off her stool laughing.

"My father was a spaceman," Mark said with dignity, "and I want to learn all I can about running a ship."

"Interplanetary maybe," Barski said between bursts of laughter, "but there ain't been no mere male go faster than light and live to tell about it since the Karsen Drive was invented."

"I'm familiar with the theory of why males die," Mark said. "However, one day they'll find a way around that, and I plan on being ship-qualified when that time comes."

"Don't understand none of that X and Y chromosome crap," Barski growled. "Just know that any of ya dingle-dangles get wasted when the ship goes FTL. Better leave the spacing to them what can handle it, tightpants." She leaned forward, drink-reddened eyes narrowing suspiciously, and regarded Mark. "Say, ya ain't one of them Men's Lib creepos are ya?"

"No, no," Mark said hastily and snuggled up to Barski. "I know my place. Let's go, honey—take me out of here."

They got up and started toward the door with Barski navigating pretty well despite her large cargo of alcohol. She responded to her shipmates' ribald comments as they passed with the standard lewd winks and grins. Her arm was draped protectively over Mark's shoulder.

It was quiet and dark outside as they walked down the street toward Mark's hotel room. Other than bursts of light from an occasional ground car going by, there was only the fitful glow of the energy-efficient street lights and, at wide intervals, pools of illumination spilling from the doorway of other dives catering to the lusty appetites of the spacesailors. The night air had sobered Barski slightly, and she was in a more mellow mood.

"It ain't easy out there, ya know," she commented to Mark. "Ya better off not being able to go."

"Things aren't any too super here," Mark said. "You girls make all the money traveling in space, and you control trade here on the ground. It's hard for a man to get a good job; you have them all locked up. And, for those of us with no skills and no wife to support us, all we have left to sell is our bodies. A guy's gotta eat."

"Ya won't go broke, babe, that's for certain sure!" Barski said, pulling Mark closer and getting her mind back on the project at hand. "How much further is this place of yours?"

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"In the next block. You can see the sign from here."

Barski squinted and made out a barely-lit hotel sign swinging in the fitful breeze. A crafty look passed quickly over her face. "Listen, tightpants. What ya said about wanting to learn about starfaring, how serious are ya?"

"I've been reading everything I can find for several years and talking shop with all the girls who take me out. I know quite a bit."

"Also, ya gotta point about the Karsen Drive being modified someday so that men can go FTL. Matter fact, my section chief was telling me just the other day that she'd read an article on it. They're pretty close to the breakthrough."

"Why, that's great!" Mark said and pressed closer to Barski. "You wouldn't believe how long I've prepared for that day."

"Yeah," Barski said with a tinge of respect in her voice. As they leisurely strolled up to the hotel entrance, she asked several questions concerning the Karsen engines she worked on and was impressed by Mark's detailed knowledge. "Ya are pretty well versed for a dingle-dangle," she conceded. "Tell ya what. I got three days shore leave before my ship takes off. If we could work out a deal where ya give me what I want at no charge then I could fill ya in on the finer points of engine phase alignment and the like."

Mark clapped his hands together with pleasure. "It's a bargain, and I'll treat you real good!"

"Fine," Barski said as they mounted the creaky stairs toward Mark's room. She was secretly very pleased with herself. As far as she knew, they were not close at all to solving the by-effect of the Karsen Drive that killed males; but she had used this line before with the same success. After all, she thought, a spacesailor needs her recreation and it's ever so sweeter free. She patted Mark on the tail as they reached his room and entered. Men are all right, she decided for the hundredth or so time, only in their place—this Men's Lib stuff was just so much rocketwash.

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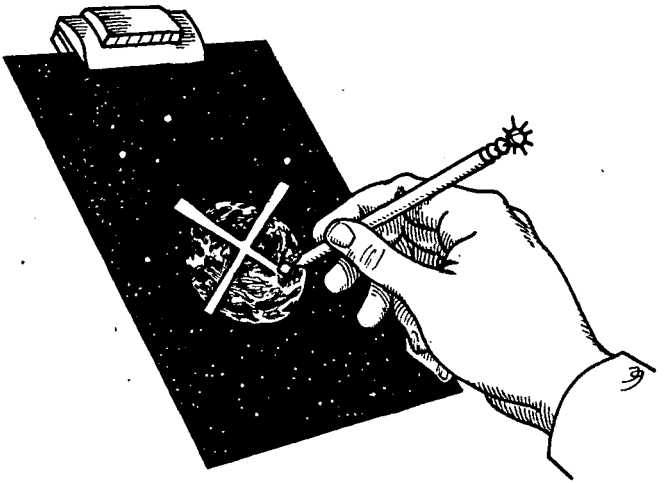
THE SAMPLER

by David J. Hand

art: Jack Gaughan



The author is a lecturer in statistics at London University. This is his second SF sale—the first was also published in IA'sfm*—and he has sold several science fact articles. He has just completed an SF novel.*

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I think I may have made a terrible mistake.

I'm rather worried about it. In fact, I haven't slept for several days now.

The interview hasn't been shown on TV, and it seems more and more likely the stranger was telling the truth.

I guess I've no one but myself to blame. If I'd been a bit more willing to listen instead of oh-so-eager to put down, then maybe I'd have thought before answering. Or maybe I wouldn't—after all, as Bern says, what I told the guy was the truth.

But perhaps I'd better begin at the beginning. That way you can draw your own conclusions and not make the same mistake I did. That way maybe it won't be too late. I hope.

It was a Sunday, and I always let myself go a bit on Sundays. The way I see it, apart from Doug and Bern, the two guys I share the house with, no one's going to see me so what difference does it make if I'm unshaven and wear old clothes? Of course, I know Doug doesn't like me dressing so casually; but, as Bern pointed out to me and as I told Doug, nobody has to look. Anyway, Doug and I don't get on too well together, though both of us get on okay with Bern. Funny that, isn't it, how someone you like can also be liked by someone you hate?

Still, I'm getting away from the story.

It was pretty late when I got up—ten or eleven I guess—and I crawled into my oldest pair of jeans. On the landing I bumped into Bern; and he warned me that Doug had already nabbed the table downstairs, covering it with books and papers so I'd have to eat my breakfast standing up. I know Doug does something with computers, but I'm not sure what Bern does. Some kind of reporter, I guess, because he always seems to surface at trouble spots in the town—covering them, he says.

Downstairs I saw Bern was right; computer printouts lined the table.

"Glad to see you're up at last," Doug said. "Bern said you'd be down half way through the morning spilling coffee all over my stuff."

Of course I knew Bern wouldn't say anything like that—it was just Doug's natural bitchiness.

"You going to get the paper?" Doug asked.

"Thought *you* might. For a change."

"I got it last week. It's your turn." He was right. Somehow, I don't know how, Bern never gets the paper. It's always either Doug or me. But I don't mind that. What I object to is Doug's attitude—we always seem to have an argument about who should get it. Bern

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tries to smooth things over—he might have a word with each of us after a particularly bad row, but it never seems to help. Sometimes it even makes thing worse! Trouble is Doug and I just don't get on too well together.

I peered out of the window, wiping the condensation away with the curtain. Doug tutted pointedly. Outside I could see a sheen of white frost on the grass. I went into the hall and returned with my old leather jacket.

"Since you've been up for so long you could've got the paper."

Doug, just as determined as me to have the last word, shouted at me as I headed out: "Work! I'm not lazing around, you know. It's work."

I slammed the door.

I was right about the cold. Really biting. Somehow the frost seemed to make my heels echo louder on the pavement—or maybe it was just because there was hardly anyone else about. I'm used to that street being crowded, and this Sunday the only other person I could see was an old lady walking her dog in the distance.

Weather like that makes my body regret being attached to a brain that wanted to get up.

I bought the paper and began to shuffle back up the hill, glancing at the headlines as I did so. And that was when I first saw him.

I didn't become aware of him until I was about thirty paces away from him. At the time I thought nothing of it since I was engrossed in the paper, but afterwards I began to wonder. I mean, it's quite possible I just didn't notice him before; but on the other hand he did seem to appear awfully suddenly.

Anyway, I continued walking towards him, wondering why he was standing there doing nothing. As I drew up our eyes met, and it was obvious he was going to say something. He stepped towards me.

I can remember thinking then that it always seems to happen to me. You'd think the torn leather jacket, the patched jeans, and the unshaven face would put them off; but it doesn't. If they're lost they always ask me the way. If they're down-and-out they always ask me for a few pence for a cup of tea. And so on. Maybe I've got a kind face or something.

Anyway, like I was saying, he stepped towards me.

"Excuse me," he says, a polite smile adorning his face.

For the life of me I can't remember now what he was wearing. Something pretty nondescript, I guess. I'd be the world's worst witness.

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I stopped. "Yeah?" I'm never at my best in the morning.

"Do you mind if I ask you a few questions?"

"Uh." I grunted and shook my head.

"I'm carrying out a survey on behalf of the Sirius Stellar Union into the suitability of the human race." He paused and his polite smile lengthened, "Your race, for inclusion into the Union."

I stared at him blankly.

You ever had your feet knocked out from under you? When your body hasn't realised it yet but your supports are gone? In a microsecond or two, reality is going to snap back and the awful inevitability of gravity is going to snatch you to the ground.

That's how I felt then. He wasn't asking me the way. He wasn't asking for money. He wasn't even trying to sell me pornographic pictures.

"You *what*?"

"How do you feel about non-humans?"

I can only remember ever having felt like that once before. Bern and I were in a nightclub when a fight broke out. Bern was saying something to a group of guys he knew when all of a sudden two of them started swinging at each other. For no reason as far as I could gather. I was taken completely by surprise, just like now.

"Feel about . . . ?" I said. My brain quit threshing and began to climb its way back to stability. The guy was obviously a nut.

Well, I could play the game.

"Hold on a moment," I said. "If you want to find out how suitable we are, why don't you go to the top? Why come to me? Surely you don't think I'm representative of the whole of humanity?"

"Oh no. Indeed not." He smiled superciliously, as if I'd asked a stupid question. It was at this point that I began to dislike the fellow. Everybody hates being treated like an idiot—especially by a mental case. "But your leaders are not representative either. In fact their very roles as leaders make them eminently non-representative. And it would be a pity to reject humanity on the basis of a distorted picture, wouldn't it?"

"Hmm." Mad or not, supercilious or not, the guy certainly had style.

"So you see," he continued, "we're taking a proper random sample. A very large random sample, I might add. And basing our evaluation on that."

"Okay, but why me?"

"You're just one of the sample." It occurred to me then that if the guy had been what he said, instead of merely crazy, that my stupid

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questions wouldn't be contributing much to humanity's worth. As it was I didn't like to be so obviously out-argued by a nut. I made an effort to wake my sluggish brain.

"You see," he was saying, "we believe we have a moral duty to see if we can work together with developing young races like yours. There are races who don't hold such opinions, who do their best to crush young civilisations. So you can see how lucky you are that we've contacted you first!"

The carefully planned complexity of the guy's fantasy was depressing me—until I hit on the solution.

Obviously it *wasn't* a fantasy.

I don't know if you have TV show set-ups over there in the States. You know, the kind where a ridiculous situation is arranged and the response of the poor innocent victim is filmed from a concealed camera. Like an engineless car rolling down a hill into a garage—and the driver claiming to the bemused mechanics that the engine was there when he started. Or the attractive blond on the railway station appealing to young men to help her carry her suitcase—which they can't even lift since it's full of bricks

I was obviously the victim of one of those.

Whenever I've seen one of those shows, I've laughed along with everyone else at the imbecilic reactions of the ignorant victims. The mechanics peering under the car or looking into the trunk. The young men looking at the girl's biceps and wondering how on Earth she got the case there in the first place. And, of course, like everyone else, I'd thought how I'd react differently—if I realised in time what was going on.

Well now I did.

I glanced covertly round for a hidden cameraman; but there was nothing obvious, so I turned my attention back to the stranger.

"I see. And you want to know what *I* think about aliens?"

"That's right."

I took a deep breath. My invisible audience was going to be impressed at the depth and lucidity of my response.

"I think the effect of an alien intelligence on Mankind would be overwhelmingly good." That should rock 'em!

The stranger smiled encouragingly and I decided how I would phrase my next words. Fortunately, what with Bern having a professional interest, I'd discussed some of what I was about to say with him. I even managed to work in one or two of his phrases.

"At the moment Mankind is split into an abundance of warring factions. We have the superpowers, hovering on the brink of total

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war. We hear stories every day of how the talks on when to have the talks on where to have the talks on restricting a sub-class of weapons have broken down. And other countries are involved too. Even those nations not involved in explicit war are often responsible for surreptitious violence: the torturing of dissidents, the killing of and by guerrillas. And so it goes on. Here, right down at grass roots level, the people are in conflict. You know that in this very town half the people are out of work on strike? They want higher wages and their management claim they can't afford it." I paused for breath, remembering what Bern had said about the strikes. From what he said both sides were being just plain stupid. It made you sick of the lot of them.

"Now if Mankind was to be presented with incontrovertible evidence of non-human intelligence it would be shattering. The old ideas of anthropocentricity would be blown for once and all."

I hesitated on the brink. Here came the punchline.

"Man would unite against the common enemy."

The fixed smile which had locked onto the other's lips remained where it was, but the eyes went blank.

"The common enemy? But we're not warlike."

I really admired the way he was sticking to his story. Still, I guessed he'd had plenty of practice acting for his concealed camera.

"Does it matter? By definition extraterrestrial races aren't Man. They're different. And that difference would be enough. All the races of Man would recognise their own fundamental humanity, and they'd unite." If I'd known where the camera was I'd have turned at that point and bowed.

"Well, thank you," the stranger was saying and I couldn't resist a slight smirk. I'd beaten him at his own game. I'll bet it wasn't often he got such a coherent and articulate response to a set-up. "Incontrovertible," "anthropocentric." Boy, I was really on form!

I looked down to pick up my paper, which I'd deposited on the wall next to me.

And when I looked up he was gone. I had an idea he'd walked a couple of paces away, but I didn't see how he could have got to cover in that time.

But I wasn't puzzled. Looking back, I don't know *why* I wasn't puzzled. By rights I should have been totally mystified. Or terrified.

It wasn't until the next day that I began to think about it clearly. Of course, he could just have been a nut—a very fast-moving one, but crazy nevertheless. But on the other hand . . .

When I got back I mentioned the incident to Bern and Doug.

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"Probably just a nut," said Bern. "You shouldn't be so trusting. Doug was just saying you were gullible. Too easily led by others and so on."

"That's not quite what I said," put in Doug; but Bern cut him off with a smile and a wave of his hand. And if I know Doug, he'd been saying something far worse.

"As if a survey was a reliable way to find out what any race was like anyway," Bern continued. "A much better way would be to live amongst them for a while. That way, if you decide they're not suitable, you can get them to fight amongst themselves. Destroy them from within."

SECOND SOLUTION TO WEIRD NUMBERS FROM TITAN (from page 65)

There is no such sequence. This is easily proved by following the same construction procedure used earlier. When you reach this point:

1 3 9 . . .
2 6 . . .
4 9 . . .
5 . . .

you encounter an unavoidable duplication of 9.

Now see if you can guess why the *Bagel*'s computer is called VOZ. Turn to page 109 for the explanation.

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ANN ATOMIC'S SPACE CASES

by Sharon N. Farber

art: Freff

The author, when living in San Francisco, sold us two earlier pieces. She now resides in St. Louis, and tells us that the payment for the current piece will go toward anatomy textbooks for her first year of medical school at Washington University. It is not hard to see how that influenced the following story.

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Few names in the annals of space medicine are as well known as that of Ann Atomic, M.D. A stellar-quality obstetrician, she pioneered the use of cosmic ether as the anaesthetic of choice at the birth of stars. An ace pharmacologist, she popularized the usage of phenobarbiedoll, the tranquilizer which causes an inordinate interest in clothing. A noted researcher into trauma, she first characterized the auto-immune reaction as the injuries to the driver of a car which has struck Superman. A fair-to-middling anatomist, she was the first and only to describe the rare condition of extreme nasal hypertrophy as "the Shadow Nose."

The following cases from the files of Ann Atomic have been chosen to demonstrate her versatility both as a physician and as a pungent observer of medical progress.

I. You Are What You Eat

After a few months of hiding his coffin in the basement of the Home for Unwed Mothers, Count Dracula came to see Dr. Ann Atomic, complaining of gynecomastia and a change in the timbre of his voice. "And I haven't needed to shave in weeks," he added.

"Your problem's quite simple, milord," Ann told the neck-romancer. "You're losing your male secondary sex characteristics. You see, pregnant girls have exceedingly high serum concentrations of estrogen and progesterone, the female hormones, and these have upset your own hormonal balance. You'll need androgen shots for a while. You shall also have to stop eating at Home, or your condition will remain."

"You mean . . . ?"

"Yes, Count, for you, a pretty girl is like a malady."

"I've heard that one before," the Count sneered. "Oh, and as long as I'm here, perhaps you could also tell me why, since moving to London, I've spent less time out and around during the daylight hours. Now I just can't seem to get out of my coffin until it's already dark."

"That's quite simple as well," Ann answered. "The sun never sets on the British vampire."

II. Beside the Babylonia Brook

Years of searching the Underworld for his dead friend Enkidu had turned Gilgamesh into a nervous wreck. He had ulcers, colitis, and high blood pressure; and he ground his teeth.

"You need a rest cure," Ann Atomic told the Sumerian hero. "I've arranged for you to rent a nice cottage in the middle of Babylonia.

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You'll have peace and quiet there—the only noise is a charming babbling brook."

Gilgamesh followed his physician's advice, and by autumn he was his old healthy self again, and able to resume his quest. However, while living in the cottage Gilgamesh had so impressed his neighbors that they decided to commemorate his stay by renaming the place "the Mid-Sumer Knight's Stream."

III. Heir Today . . .

The Sirians colonized their part of the galaxy so long ago that their various descendants have forgotten the exact dates of the migrations. Recently, before an antidote could be perfected, a newly emergent space virus killed all the inhabitants of Sirius 4, the mother civilization. This left an empty but perfectly good planet, with an excellent dry climate and countless millennia of accumulated treasures.

As Sirian law had held for primogeniture, the Intergalactic Court decided that ownership of the planet and all its chattels would devolve upon the oldest Sirian colony. In order to settle the serious issue of which of the Sirius Issue was the eldest, the Court summoned Ann Atomic.

Ann discovered that the colonials were identical in almost all respects to the gene pool found on Sirius 4 before the epidemic. However the colony planets, unlike Sirius 4, did not suffer from periodic droughts, and over the centuries the colonial populations had begun to lose their adaptations for water-retention. The loss of the adaptation through random mutation would be expected to statistically correlate with the time since the foundation of the colony, when the environmental stress requiring the fluid conservation trait was removed.

Ann placed samples of each colony's population in a water-restricted environment and observed the subjects' rates of dehydration. The group suffering most from the lack of water was considered to be from the oldest colony, and their colonial civilization was declared the legal heir, entitled to inherit Sirius 4. Ann published a report of the theory behind her experiment in the *Galactic Journal of Evolutionary Genetics,* under the title of "The Thirst Postulate of Relativity."

IV. . . . Gone Gomorrah

There was disturbance in the ether one day, and the subspacetime radio wasn't working too well. When Ann Atomic, carrying her

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trauma kit, arrived on the plains outside Sodom, she found the city had been replaced by a radioactive pit. Ann looked in vain for her patient, seeing only her patient's husband and two daughters, who were standing beside a four-foot pillar of sodium chloride.

"I got here as soon as I could—where's Mrs. Lot?"

"Right here," the family answered. "She turned into a block of salt."

"Oh, silly me," Ann said, smacking her head with her palm. "I thought you said 'she blocked an assault.' Well, if it's any consolation, she's finally become a pillar of the community."

V. Disorient Express

Following a long voyage circumnavigating the galaxy, the entire crew of the *Maiden Japan* evinced severe psychological stress. They refused to believe that they had ever been off their own planets, or indeed that space travel was even possible. Ann Atomic referred the earthling crewpersons to an alienist, and the alien crewthings to a humanist. Later she consulted with the psychiatrists, who had both agreed upon a diagnosis. "Quite a regular form of cosmic disorientation."

"Of course!" Ann cried. "You mean Space Doubt!"

VI. The Uncertain Principal

The modern space physician is often required to make snap diagnoses under the most adverse of conditions. One such occasion took place recently on Ann Atomic's night off. She had attended a meeting of the International Union of Impure and Misapplied Chemistry (their motto: "The road to hell is paved with good inventions") and then had gone for an after-meeting drink with her friend Esther Linkage. They wound up at a favorite hang-out of the mad scientist set, the Bar Sinister (just across Wheatstone Bridge from Petty Mall).

"I know it's illegal," Ann remarked, "but I'd like a glass of absinthe. Do you think it will rouse the ire of the authorities?"

"Don't worry, madam," said a tall man with a Prussian accent. "Your absinthe will barely be noticed."

"Ah, Ann," Esther Linkage smiled. "This is one of my fellows in the elite corps of aromatic chemists known as 'the Fellowship of the Ring.' Ann Atomic, the Baron Sacher-Maxwell."

He clicked his heels and kissed her hand, saying "I am into E and M."

"Electricity and magnetism," Esther explained hastily.

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The Baron continued, "As a noted medical practitioner, perhaps you might shed light on a curious problem of mine," and he indicated a scar which began above his left eye and traversed the cheek below.

"Goodness, I didn't notice that before."

"That is because it's not always there; it comes and goes, and when I look in the mirror I am never certain whether or not I shall find it."

Ann Atomic said, "Don't worry, Baron, that is exactly the sort of behavior one should expect from a Heisenberg Duelling Scar."

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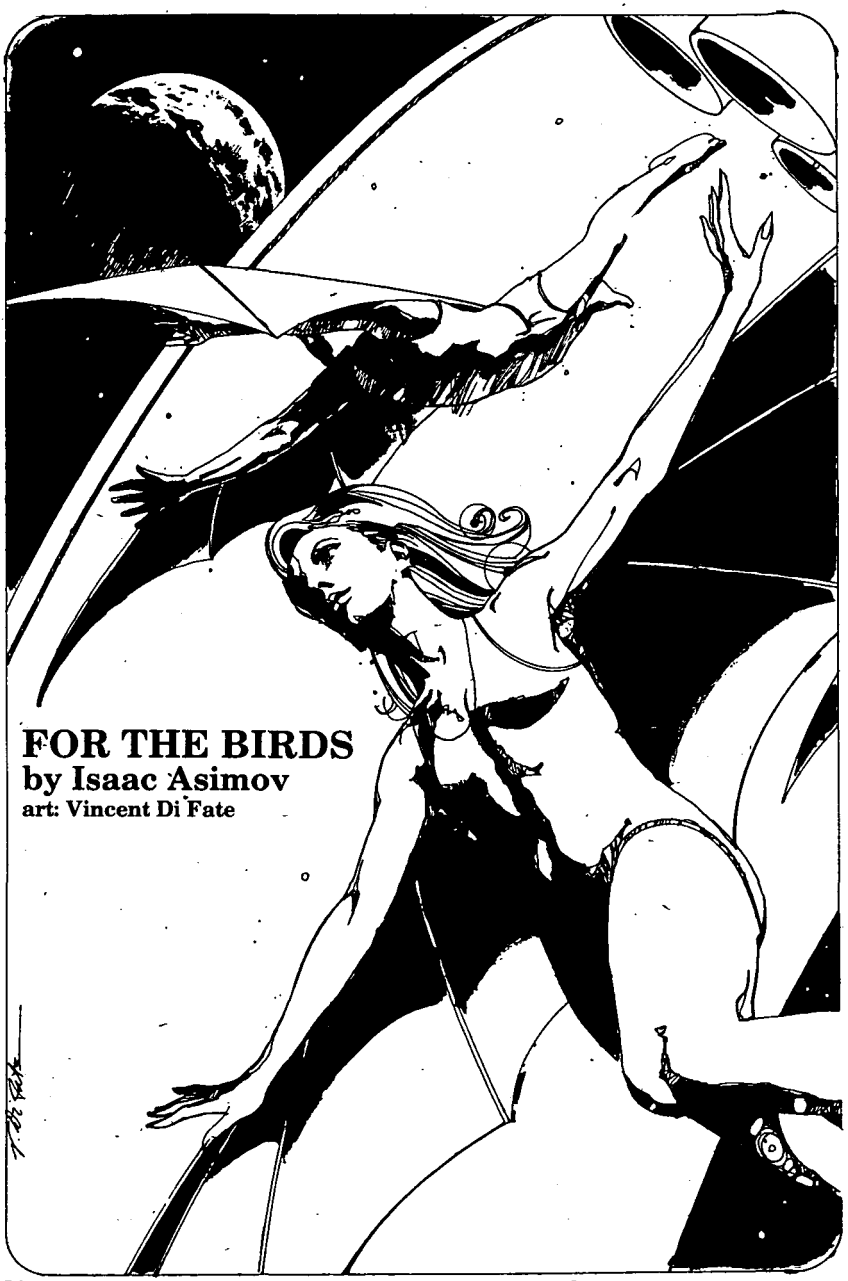

FOR THE BIRDS

by Isaac Asimov

art: Vincent Di Fate

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Here, Dr. Asimov offers another view on How Things Will Be in a space station that's big enough to fly around in . . .

Charles Modine, despite the fact that he was in his late thirties and in perfect health, had never been in space. He had seen space settlements on television and had occasionally read about them in the public prints, but it went no farther than that.

To tell the truth, he was not interested in space. He had been born on Earth, and Earth was enough for him. When he wanted a change of environment, he turned to the sea. He was an avid and skilled sailor.

He was therefore repelled when the representative of Space Structures, Limited, finally told him that in order for him to do the job they were asking him to do, he would have to leave Earth.

Modine said, "Listen. I'm not a space person. I design clothes. What do I know about rockets and acceleration and trajectories and all the rest of it?"

"*We* know about that. You don't have to," said the other, urgently. Her name was Naomi Baranova and she had the queer, tentative walk of someone who had been in space so long she wasn't sure what the gravitational situation was at the moment.

Her clothes, Modine noted with some irritation, functioned as coverings and as little else. A tarpaulin would have done as well.

"But why need I come out to a space station?"

"For what *you* know. We want you to design something for us."

"Clothes?"

"Wings."

Modine thought about it. He had a high, pale forehead and the process of thought always seemed to flush it somewhat. He had been told that at any rate. This time, if it flushed, it was partly in annoyance. "I can do that here, can't I?"

Baranova shook her head firmly. She had hair with a dark reddish tinge that was slowly being invaded by gray. She didn't seem to mind. She said, "We want you to understand the situation, Mr. Modine. We've consulted the technicians and the computer experts, and they've built the most efficient possible wings, they tell us. They've taken into account stresses and surfaces and flexibilities and maneuverabilities and everything else you can imagine—but it doesn't help. We think perhaps a few frills—"

"Frills, Ms. Baranova?"

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"Something other than scientific perfection. Something to rouse interest. Otherwise, the space settlements won't survive. That's why I want you there; to appreciate the situation for yourself. We're prepared to pay you very well.

It was the promised pay, including a healthy retainer, win or lose, that brought Modine into space. He was no more money-mad than the average human being, but he was not money-insensitive either, and he liked to see his reputation appreciated.

Nor was it actually as bad as he had expected. In the early days of space travel, there had been short periods of high acceleration and long cramped periods in small modules. Somehow that was what Earth-bound people still thought of in connection with space travel. But a century had passed, and the shuttles were commodious, while the hydraulic seats seemed to sop up the acceleration as though it were nothing more than a coffee-spill.

Modine spent the time studying photographs of the wings in action and in watching holographic videotapes of the flyers.

He said, "There's a certain grace to the performance."

Naomi Baranova smiled rather sadly, "You're watching experts—athletes. If you could see me trying to handle those wings and manage to tumble and side-slip, I'm afraid you would laugh. And yet I'm better than most."

They were approaching Space Settlement Five. Its name was Chrysalis, officially; but everyone called it Five.

"You might suppose," said Baranova, "that it would be the other way around, but there's no feeling of poetry about the place. That's the trouble. It's not a home; it's just a job, and it is hard to make people establish families and settle down. Until it's a home—"

Five showed up as a small cylinder, far away, looking much as Modine had seen it on television on Earth. He knew it was larger than it looked, but that was only an intellectual knowledge. His eyes and his emotions were not prepared for the steady increase in size as they approached. The spaceship and he dwarfed steadily, and—eventually—they were circling an enormous object of glass and aluminum.

He watched for a long time before he became aware that they were still circling. He said, "Aren't we going to land on it?"

"Not that easy," said Baranova. "Five rotates on an axis about once in two minutes. It has to in order to set up a centrifugal effect that will keep everything inside pressed against the inner wall and create an artificial gravity. We have to match that speed before we can land. It takes time."

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"Must it spin that quickly?"

"To have the centrifugal effect mimic Earth-strength gravity, yes. That's the basic problem. It would be much better if we could use a slow spin to produce a tenth-normal gravity or even less, but that interferes with human physiology. People can't take low gravity for too long."

The ship's speed had nearly matched the rotation period of Five. Modine could clearly see the curve of the outer mirror that caught the sunlight and with it illuminated Five's interior. He could make out the Solar power station that supplied the energy for the station, with enough left over for export to Earth.

And they finally entered at the pole of the cylinder's hemispherical end-cap and were inside Five.

Modine had spent a full day on Five, and he was tired—but he had, rather unexpectedly, enjoyed it. They were sitting now on lawn furniture—on a wide stretch of grass—against a vista of suburbia.

There were clouds overhead—sunshine, without a clear view of the Sun itself—a wind—and, in the distance, a small stream.

It was hard to believe he was on a cylinder floating in space in the Moon's orbit, circling Earth once a month. He said, "It's like a world."

Baranova said, "So it seems when you're new here. When you've been here a time, you discover you know every corner of it. Everything repeats."

Modine said, "If you live in a particular town on Earth, everything repeats too."

"I know. But on Earth you can travel widely if you wish. Even if you don't travel, you know you can. Here you can't. That's not so good; but it's not the worst."

"You don't have the Earth's worst," said Modine. "I'm sure you don't have weather extremes."

"The weather, Mr. Modine, is indeed Garden of Edenish, but you get used to that. —Let me show you something. I have a ball here. Could you throw it high up, straight up, and catch it.'

Modeen smiled. "Are you serious?"

"Quite. Please do."

Modeen said, "I'm not a ball-player, but I think I can throw a ball. I might even catch it when it comes down."

He threw the ball upward. It curved parabolically, and Modeen found himself drifting forward in order to catch it, then running. It fell out of reach.

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Baranova said, "You didn't throw it straight up, Mr. Modine."

"Yes I did," gasped Modine.

"Only by Earth-standards," said Baranova. "The difficulty is that what we call the Coriolis force is involved. Here at the inner surface of Five, we're moving quite rapidly in a great circle about the axis. If you throw the ball upward it moves nearer the axis where things make a smaller circle and move more slowly. However, the ball retains the speed it had down here, so it moves ahead and you couldn't catch it. If you had wanted to catch it, you would have had to throw it up and back so that it would loop and return to you like a boomerang. The details of motion are different here on Five than on Earth."

Modine said, thoughtfully, "You get used to it, I suppose."

"Not entirely. We live on the equatorial regions of our small cylinder. That's where the motion is fastest and where we get the effect of normal gravity. If we move upward toward the axis, along the end-caps toward the poles, the gravitational effect decreases rapidly. We frequently have to go up or axis-ward, and—whenever we do—the Coriolis effect must be taken into account. We have small monorails that must move spirally toward either pole; one track poleward, another returning. In the trip we feel ourselves perpetually canted to one side. It takes a long time to get used to it and some people never learn the trick of it. No one really likes to live here for that reason."

"Can you do something about that twisting effect?"

"If we could make our rotation slower, we would lessen the Coriolis, but we would also lessen the feel of gravitation, and we can't do that."

"Damned if you do; damned if you don't."

"Not entirely. We could get along with less gravitation, if we exercise; but it would mean exercise every day for considerable periods. That would have to be fun. People won't indulge in daily calisthenics that are troublesome or a bore. We used to think that flying would be the answer. When we go to the low-gravity regions near the poles, people are almost weightless. They can almost rise into the air by flapping their arms. If we attach light plastic wings to each arm, stiffened by flexible rods, and if those wings are folded and extended in just the right rhythm, people can fly like birds."

"Will that work as exercise?"

"Oh, yes. Flying is hard work, I assure you. The arm and shoulder muscles may not have to do much to keep you aloft but they must be in continuous use to maneuver you properly. It keeps up the

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muscle tone and bone calcium, *if* it's done on a regular basis. —But people won't do it."

"I should think they'd love to fly."

Baranova sniffed. "They would, if it were easy enough. The trouble is that it requires skillful coordination of muscles to keep steady. The slightest errors result in tumbling and spinning and almost inevitable nausea. Some can learn how to fly gracefully as you saw on the holo-casettes, but very few."

"Birds don't get sea-sick."

"Birds fly in normal gravity fields. People on Five don't."

Modine frowned and grew thoughtful.

Baranova said, "I can't promise that you'll sleep. People don't usually their first few nights on a space settlement. Still, please try to do so and tomorrow we'll go to the flying areas."

Modine could see what Baranova had meant by saying the Coriolis force was unpleasant. The small monorail coach that took them poleward seemed constantly to be sliding leftward, and his entrails seemed to be doing the same. He held on to the hand-grips, white-knuckled.

"I'm sorry," said Baranova, sympathetically. "If we went more slowly, it wouldn't be so bad, but we're holding up traffic as it is."

"Do you get used to this?" groaned Modine.

"Somewhat. Not enough."

He was glad to stop finally, but only limitedly so. It took a while to get used to the fact that he seemed to be floating. Each time he tried to move, he tumbled; and each time he tumbled he didn't fall but drifted slowly forward or upward and returned only gradually. His automatic kicking made things worse.

Baranova left him to himself for a while, then caught at him and drew him slowly back. "Some people enjoy this," she said.

"I don't," gasped Modine, miserably.

"Many don't. Please put your feet into these stirrups on the ground and don't make any sudden movements."

There were five of them—people wearing wings—flying in the sky. Baranova said, "Those five 'birds' are here just about every day. There are a few hundred more who are there now and then; and we could accommodate, here and at the other pole, as well as along the axis, something like five thousand flyers at a time. That is enough to keep Five's thirty thousand in condition. What do we do?"

Modine gestured and his body swayed backward in response.

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"They must have learned how, those—birds—up there. They weren't born birds. Can't the others learn it, too?"

"Those up there have natural coördination."

"What can I do then? I'm a fashion designer. I don't create natural coordination."

"Not having natural coordination doesn't stop you altogether. It just means working hard, practicing longer. Is there any way you could make the process more—fashionable? Could you design a flying-costume; suggest a psychological campaign to get the people out? If we could arrange proper programs of exercise and physical fitness, we could slow Five's rotation, weaken the Coriolis effect, make this place a home."

"You may be asking for a miracle. —Could you have them come closer?"

Baranova waved, and one of the birds saw her and swooped toward them in a long, graceful curve. It was a young woman. She hovered ten feet away, smiling, her wings flicking slightly at the tips.

"Hi," she called out. "What's up?"

"Nothing," said Baranova. "My friend wants to watch you handle the wings. Show him how they work."

The young woman smiled and, twisting first one wing, then the other, performed a slow somersault. She straightened to a halt with a back-handed twist, of both wings, then rose slowly, her feet dangling and her wings moving slowly. The wing-motion grew more rapid, and she was off in wild acceleration.

Modine said, after a while, "Rather like ballet-dancing, but the wings are ugly."

"Are they? Are they?"

"Certainly," said Modine. "They look like bat-wings. The associations are all wrong."

"Tell us what to do then? Should we put a feather-design on them? Would that bring out the flyers and make them try harder to learn?"

"No." Modine thought for a while. "Maybe we can make the whole process easier."

He took his feet out of the stirrups, gave himself a little push and floated into the air. He moved his arms and legs experimentally and rocked erratically. He tried to scramble back for the stirrups, and Baranova reached up to pull him down.

Modine said, "I'll tell you what: I'll design something; and if someone here can help me construct it according to the design, *I'll* try to fly. I've never done any such thing; you've just seen me try to wriggle in the air and I can't even do that. Well, if I use my design

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and *I* can fly, then anyone can."

"I should think so, Mr. Modine," said Baranova, in a tone that seemed suspended between skepticism and hope.

By the end of the week, Modine was beginning to feel that Space Settlement Five was home. As long as he stayed at ground level in the equatorial regions, where the gravitational effect was normal, there was no Coriolis effect to bother him and he felt his surroundings to be very Earth-like.

"The first time out," he said, "I don't want to be watched by the population generally, because it may be harder than I think and I don't want to get this thing to a bad start. —But I would like to be watched by some of the officials of the Settlement, just in case I make it."

Baranova said, "I should think we would try in private first. A failure the first time, whatever the excuse—"

"But a success would be *so* impressive."

"What are the chances of success? Be reasonable."

"The chances are good, Ms. Baranova. Believe me. What you have been doing here is all wrong. You're flying in air—like birds—and it's hard. You said it yourself. Birds on Earth operate under gravity. The birds up here operate without gravity—so everything has to be designed differently."

The temperature, as always, was perfectly adjusted. So was the humidity. So was the wind speed. The atmosphere was so perfect it was as though it weren't there. —And yet Modine was perspiring with a bad case of stage fright. He was also gasping. The air was thinner in these gravity-free regions then at the equator—not by much, but enough thinner for him to have trouble gathering enough with his heart pounding so.

The air was empty of the human birds; the audience was a handful—the Coordinator, the Secretary of Health, the Commissioner of Safety, and so on. There were a dozen men and women present. Only Baranova was familiar.

He had been outfitted with a small mike, and he tried to keep his voice from shaking.

He said, "We are flying without gravity, and neither birds nor bats are a good model for us. They fly *with* gravity. —It's different in the sea. There's little effective gravity in water, since buoyancy lifts you. When we fly through no-gravity water, we call it swimming. In Space Station Five, where there's no gravity in this region,

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the air is for swimming, not for flying. We must imitate the dolphin and not the eagle."

He sprang into the air as he spoke, wearing a graceful one-piece suit that neither clung skin-tight, nor billowed. He began to tumble at once, but stretching one arm was sufficient to activate a small gas cartridge. A smoothly curved fin emerged along his spinal column, while a shallow keel marked the line of his abdomen.

The tumbling ceased. "Without gravity," he said, "this is enough to stabilize your flight. You can still tip and turn, but always under control. I may not do it well at first, but it won't take much practice."

He stretched his other arm and each foot was suddenly equipped with a flipper—each elbow with another.

"These," he said, "offer the propulsive force. You needn't flap the arms. Gentle motions will suffice for everything but you have to bend your body and arch your neck in order to make turns and veers. You have to twist and alter the angle of your arms and legs. The whole body is engaged, but smoothly and non-violently. —Which is all the better, for every muscle in your body is involved and you can keep it up for hours without tiring."

He could feel himself moving more surely and gracefully—and faster. Up, up, he was suddenly going, with the air rushing up past him until he was almost in a panic for fear he would not be able to slow up. But he turned his heels and elbows almost instinctively and felt himself curve and slow.

Dimly, through the pounding of his heart, he could hear the applause.

Baranova said, admiringly, "How did you see this when our technicians couldn't?"

"The technicians started with the inevitable assumption of wings, thanks to birds and airplanes, and designed the most efficient ones possible. That's a technician's job. The job of a fashion designer is to see things as an artistic whole. I could see that the wings didn't fit the conditions of the space settlement. Just my job."

Baranova said, "We'll make these dolphin suits and get the population out into the air. I'm sure we can now. And then we can lay our plans to begin to slow Five's rotation."

"Or stop it altogether," said Modine. "I suspect that everyone will want to swim all the time instead of walking." He laughed. "They may not ever want to walk again. *I* may not."

They made out the large check they had promised and Modine, smiling at the figure, said, "Wings are for the birds."

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ON FASTER-THAN-LIGHT PARADOXES
by Milton A. Rothman

Dr. Rothman recently retired from teaching everything from freshman physics through electronics to quantum mechanics; now he's busier than ever, writing.

1. The Unique and Constant Speed of Light.

Many science fiction stories simply assume you can travel faster than light, using one means or another, and don't worry about the consequences. This assumption, of course, gets us into trouble with Einstein's Principle of Relativity, which, for a number of reasons, forbid spaceships to travel faster than the speed of light.

Other stories (notably *The Left Hand of Darkness,* by Ursula LeGuin) try to be more careful, and properly apply the Principle of Relativity to the motion of the spaceships. As a result, these ships can only travel slower than light, the time dilation being used to let the ship travel over interstellar distances in a reasonable ship-board time. But at the same time some of these authors assume there is some way of transmitting a signal faster than light—even instantaneously—over interstellar distances. I want to show in this article that if you make the above assumptions, then what you are doing is combining two incompatable concepts—the Principle of Relativity and faster-than-light communication. As a result it is possible to get into paradoxical situations where very peculiar combinations of events can take place. But before we can understand these paradoxes it is necessary to show why the speed of light is something so special.

Einstein's Principle of Relativity is based on the observation that the speed of light is the same to all observers. That is, anybody who measures the speed of light is going to get exactly the same number, no matter how fast he is moving, or how fast the source of the light is moving. For this reason we call the speed of light an *invariant* quantity.

The invariance of the speed of light has some remarkable consequences. For example, suppose Richard Seaton, on board *Skylark III,* is traveling towards the star Capella at one half the speed of light, while John Star, on *Spaceship Orion,* is traveling away from Capella at half the speed of light. The observer on each ship meas-

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ures the speed of the light received from Capella and finds it to be 299,792.458 kilometers per second, even though one ship is traveling toward the source of the light and the other ship is traveling away. This is the same speed that would be measured even if the ships were at rest relative to the star emitting the light.

What is perhaps more surprising, John Star finds that a light beam sent to him from *Skylark III* also travels with the normal light speed (which we call c), even though the two ships are moving toward each other. At the same time, Richard Seaton, on the Skylark, measuring the speed of the light beam he himself is transmitting, finds that it, too, travels with the same velocity. Everybody gets the same number for the speed of light.

Now this is an unsettling phenomenon to someone only familiar with classical (pre-Einstein) concepts. Sound waves do not behave like this at all. The speed of a sound wave depands not only on the velocity of the source relative to the air, but also on the velocity of the observer doing the measuring. An airplane pilot measuring the speed of sound transmitted to him from another airplane will measure different speeds, depending on where the other plane is located—whether it's in front or to the side. But the speed of light depends on neither the velocity of the source nor of the observer. Any observer will measure the same light speed regardless of the source. (From here on it will be understood that we are dealing only with light traveling through a vacuum.)

The statement that the speed of light is a constant is not just theory. It is based on a very large number of experimental observations, which in recent years have become extremely accurate. It must be understood that simple measurements of the speed of light are not enough to say that this speed is a constant. This is because measurements of light speed are usually made by finding the time it takes for the light to travel back and forth over a closed path. Averaging over the two directions of travel washes out most of the change that would occur if the speed of light depended on the motion of the apparatus.

Therefore measurements having to do with the constancy of the speed of light are so-called "second order" experiments, usually involving comparison of the speed of two light beams traveling in different directions relative to the motion of the earth in its orbit. The classical experiment of this kind, of course, was the Michelson-Morley experiment, performed about 1887.

I don't want to go into details here about the experiments. (For such details see my book, *Discovering the Natural Laws,* Doubleday,

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1972.) It should be mentioned, however, that the Michelson-Morley experiment, by itself, is not sufficient to prove the constancy of the speed of light. In 1949 the well-known relativist H. P. Robertson, of the California Institute of Technology, proved that three independent types of experiments are needed to nail down the proposition that the speed of light is absolutely a constant. These three experiments test the following three hypotheses:

1. The total time required for light to traverse a given distance and then to return to its origin is independent of the direction of travel of the light beam.

2. The total time required for a light beam to traverse a closed path is independent of the motion of the source and of the observer.

3. The frequency of a moving light source (or radio transmitter) is altered by a time dilation factor that depends in a certain way on the velocity of the source relative to the observer.

All three of these statements have been verified by hundreds of experiments during the past century. The Michelson-Morley experiment tests only the first statement. The Kennedy-Thorndike experiment (1929) was the first to test the second, while the Ives-Stillwell experiment (1938) was the prototype of the third.

A traditional way of rating the accuracy of such experiments has been to go back to the old idea of light being a vibration of a hypothetical ether. If the Earth were traveling through this ether, then a Michelson-Morley type of experiment would detect the motion of the Earth through the ether. Experiments of this type always fail to find such a motion. But there is some error in every experiment, and so we describe the amount of error by saying how much ether motion could be detected by the experiment if it were there.

The original M-M experiment was precise enough to detect an "ether drift" of about 1 kilometer per second, while the actual velocity of the Earth in its orbit around the sun is 30 km/sec. Therefore the result of that experiment was considered negative. Modern techniques using laser beams are many times more precise than the older experiments. The 1964 experiment of Jaseja, Javin, and Townes was able to detect an "ether drift" less than 1/1000th of the velocity of the Earth, and none was found. A very recent experiment of A. Brillet and J. L. Hall (*Physical Review Letters,* Feb. 26, 1979) improved on the above accuracy by a factor of 4000. That is, the apparatus was capable of detecting a motion of the Earth relative to the "ether" 4,000,000 times smaller than the actual velocity of the earth around the sun. And none was found.

In modern terminology what this means is that the speed of light

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is found to be constant with a margin of error of about 2 parts in 10^{14}. The Brillet-Hall experiment is one of the most precise experiments in the annals of physics.

It is necessary to understand how precise these experiments are, and how complete these experiments are, in order to recognize that when we say "the speed of light is a constant," we are not just talking theory. We are talking about a measurement—a whole set of measurements that dovetail into a closely knit logical system of the most extraordinary precision.

Furthermore, the speed of light is unique. (Of course, when I talk about light I mean all electromagnetic waves.) Nothing traveling at any other speed has the property that its speed is the same to all observers. This is a very important statement, as we shall see.

Now, once we have established that the speed of light is a constant, then the rest of Einstein's Special Theory of Relativity can be deduced. What I want to talk about for the rest of this article is just one consequence of the theory—the effect of relativity on the concept of time—especially on the concept of simultaneity.

2. Simultaneity and the Time Dilation.

What relativity does to time is the hardest part of the theory to understand. And usually, whenever a person gets into trouble with relativity, it is because he/she has not fully understood the time part of the theory.

Even an elementary concept such as simultaneity becomes very mysterious when we look at it from the relativity point of view. Relativity is a science that studies the relationship between events. We speak of an event as taking place at a certain point in space and at a certain instant of time. Two events are simultaneous when they occur at the same time.

Intuition tells us that if Richard Seaton sees two events happening simultaneously, then John Star will also see the same two events taking place simultaneously. However, Einstein proved that our intuition is wrong. In the immortal words of George Gershwin, "It ain't necessarily so." The remarkable thing that Einstein showed was that two events that are simultaneous to one observer are not necessarily simultaneous to another observer. And everybody's ideas of time were knocked into a cocked hat.

We can demonstrate very simply how this strange state of affairs comes about. Consider three spaceships passing Earth at some high speed, spaced a few million kilometers apart. (See Fig. 1) The exact distance doesn't matter.

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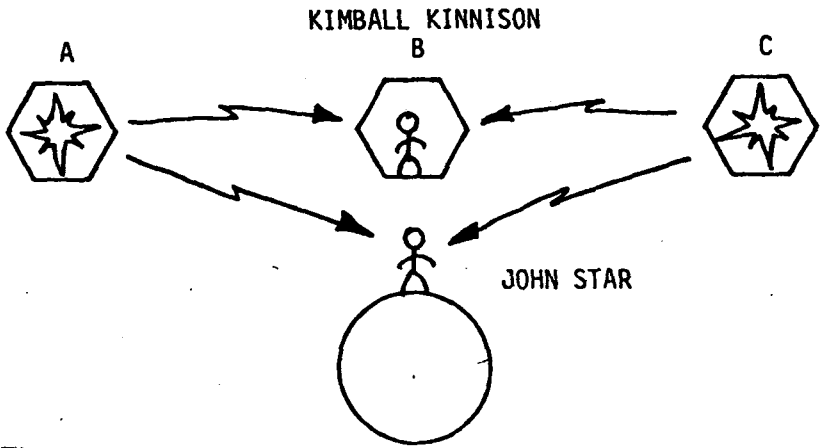

Fig. 1

Say that Kimball Kinnison is in Spaceship B. He has made spatial measurements so he knows spaceships A and C are equally distant from his ship. Now A and C each explode a bomb at the same instant of time. Kimball Kinnison knows that they both explode at the same time because he sees the light flashes reaching him at the same instant of time, and he knows he is halfway between A and C. So that's how Kimball Kinnison defines simultaneity in his reference frame.

On the other hand, consider John Star on Earth. Spaceship B passed Earth just as the light flashes from the two bombs reach Earth. So John Star sees these two flashes at the same time Kimball Kinnison does. John Star sees the flashes simultaneously, but does he say that the two bombs exploded at the same time? Not if his reasoning is correct.

John Star starts out by saying: the light flashes from the explosions travel through space with the speed of light. That's the one thing we know for sure. It's going to take some time for the light to reach Earth. Therefore when the bombs explode, the three ships must be in the position shown in Fig. 2. We see that the light from bomb A has farther to travel than the light from bomb C. But if the two flashes reach Earth at the same time, then bomb A must have gone off *before* bomb C! (Remember both light flashes travel with the same speed.)

You see that as a result of the fact that the speed of light is constant, we find inexorably that Kimball Kinnison and John Star

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disagree about the timing of the bombs. One of them says they both went off at the same time. The other says bomb A went off before bomb C. Time has gone awry.

In the jargon of relativity, we speak of Kimball Kinnison being in one reference frame, while John Star is in another reference frame. The two frames are moving relative to each other. One of the chief functions of relativity is to see how things happening in one frame appear to the people in the other frame. What we have just shown is that two events that are simultaneous in one frame are not necessarily simultaneous in another, moving frame. (For the events to appear simultaneous in both frames, the two events would have to be located at the same point in space.)

Another distortion of time is demonstrated by a different experiment. Suppose Kimball Kinnison sets up a light source, a detector, and a mirror, as shown in Fig. 3. He flashes the light and measures the time it takes for a short pulse to go from the source to the mirror and back. Let's say the time is one microsecond. What does John Star see? He's standing on Earth as Kimball Kinnison's ship flashes by, and the path of the light pulse looks to him as shown in Fig. 4. The drawing shows, not three different ships, but the same ship as seen at three different times while it moves past the Earth.

Now the path of the light flash as it goes from source to mirror to detector is much longer than it appeared to K. K. standing in his ship. But! Remember that the light travels with the same speed, regardless of the observer. So if John Star sees it traveling over a longer path, it must be taking a longer time. But John Star and Kimball Kinnison are measuring the time interval between the same pair of events: emission of the light flash from the source, and arrival at the detector. We see, then, that the time between these two events depends on the motion of the observer relative to the events.

Kimball Kinnison says the light flash takes 1 microsecond to get from source to detector; John Star says it takes a longer time—let's say 5 microseconds. This means John Star's clock makes 5 ticks for every one tick of Kimball Kinnison's clock. John Star says K. K.'s clock is running slow compared to his own. This effect is the famous time dilation—the slowing down of time in a moving reference frame. You see that the time dilation is a necessary consequence of the fact that the speed of light is a constant. (The formula for the time dilation can be derived from Fig. 4, using nothing more than the Pythagorean Theorem. See any good book on relativity.)

Now we are in a position to ask some interesting questions. Take

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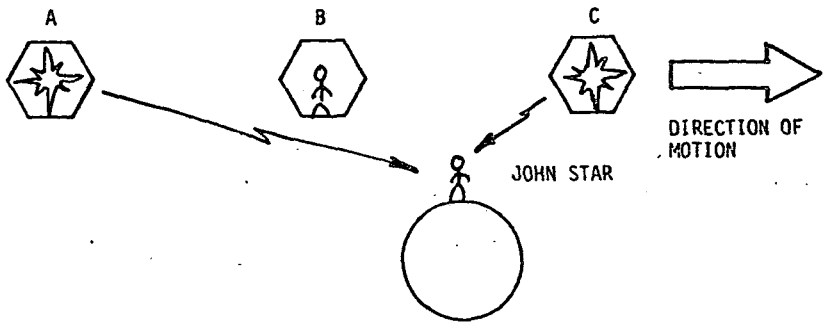

Fig. 2

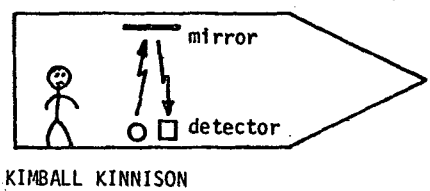

Fig. 3

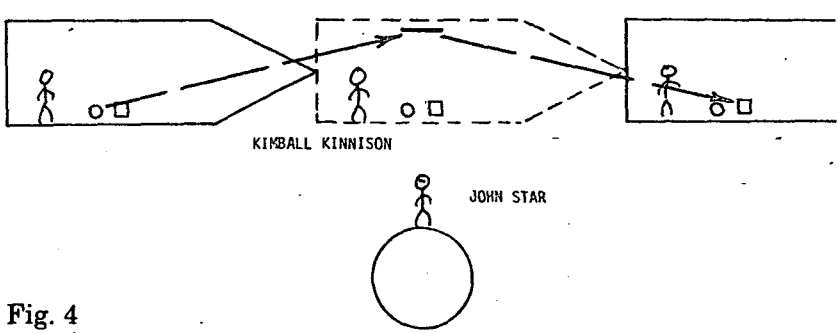

Fig. 4

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our friend Kimball Kinnison scooting along at half the speed of light, engaging in a conversation with headquarters back on Earth, using the instantaneous communication powers of his lens. First of all, what does instantaneous communication mean? It means the signal is transmitted and received at the same instant of time. This means transmission and reception is simultaneous.

But we just showed that simultaneous is all in the eye of the beholder. What is simultaneous to K. K. will not be simultaneous to Earth. Communication that looks instantaneous in one frame will not be instantaneous in another.

So what does instantaneous communication mean?

We will come back to this question shortly.

3. The Geometry of Spacetime.

There is a set of equations that allows us to find out what is happening in one reference frame if we know what is happening in another. In other words, if we know the position and time of an event in K. K.'s ship, these equations give us the position and time of the same event as seen by John Star on Earth. These equations are known as the Lorentz transformations. Hendrik Antoon Lorentz was a Dutch physicist—one of the giants of 19th century physics. He discovered the equations that bear his name by considering the properties of electromagnetic waves. These are the same equations that Einstein derived in developing the theory of relativity.

The equations are named after Lorentz because he did them first. The irony of the situation is that Lorentz never completely understood the equations. If he had, he would have been the inventor of relativity. But Lorentz never believed what the equations told him—that time could be different in two reference frames. He was stuck to classical ways of thinking, in which time is the same to all observers.

It was Einstein's ability to break away from this classical thinking that was his peculiar genius. He was aided by the brilliant mathematician Hermann Minkowski, who originated the concept that Einstein's theory could best be understood by thinking of space and time as a single entity—a space-time continuum. In other words, instead of describing the universe by three dimensions of space and a completely separate dimension of time, we now deal with a four-dimensional spacetime.

Time is now one of the four dimensions, on an equal footing with the three spatial dimensions. I emphasize that "equal footing" does not mean that time is the *same* as space. We merely mean that time

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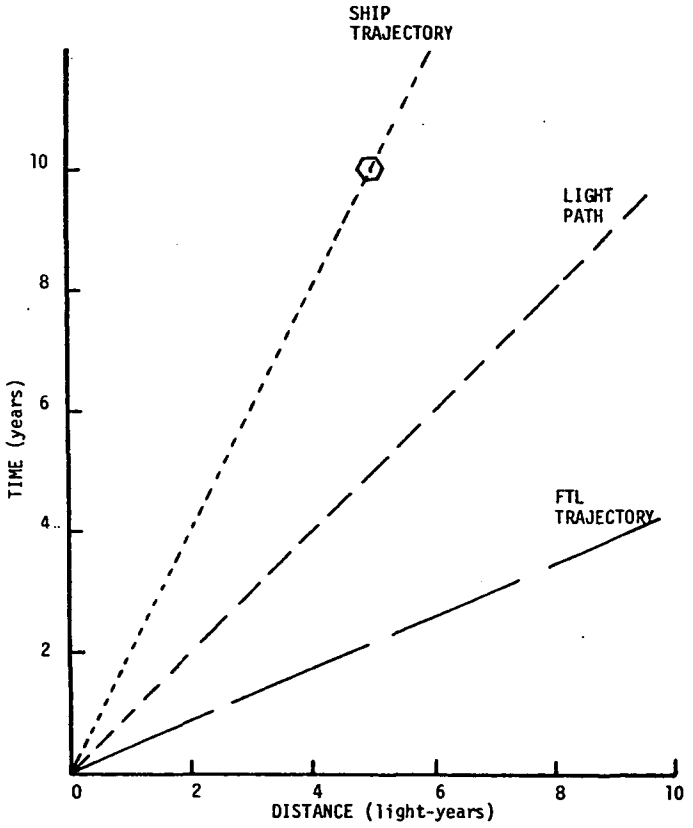
is treated the same as space mathematically. (Incidentally, there are new theories which postulate three time-like dimensions to match the three space-like dimensions. I'll let my son explain those.)

To show where events are located in this four-dimensional space, we use a spacetime diagram, such as in Fig. 5. The horizontal axis shows the distance (in light-years) away from the starting point, which in this case is Earth. The vertical axis is a time scale (in years). There can also be y and z axes, but these are left out in a two-dimensional drawing. Any point on this diagram represents the location of an event: where it is relative to Earth, and at what time.

In Fig. 5, we have located Earth on the vertical axis—at the point where x = 0. The time when all the clocks are set to zero is labeled

Fig. 5



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t = 0. As time passes, the position of Earth advances upward on the time axis. Notice that the x axis is the location of all the places where t = 0 in this frame.

We also show Kimball Kinnison's spaceship going away from Earth at half the speed of light, traveling along the trajectory so labeled. The ship has passed by Earth on zero time—that is, when t = 0. Its position is shown after 10 years (Earth time) has elapsed, and it has traveled 5 light-years through space. (In this article I am going to stick to ships traveling with constant speed, and will leave accelerating ships for another article.)

A beam of light projected from Earth at zero time will go a distance of one light-year in a time of one year, so it travels along a 45° path represented by the dashed line. A ship traveling faster than light would go along a trajectory lying below the light path. In this article we are not going to consider FTL spaceships, but whatever we say about signals going faster than light would also apply to any kind of object, spaceship or otherwise.

The diagram of Fig. 5 is the universe as seen from Earth; it is the Earth's reference frame, and is an ordinary cartesian coordinate system, in which the axes are perpendicular to each other. Now let us see what the ship's reference frame looks like. You must understand, of course, that the people in the ship think that they are standing still, and that the rest of the universe is moving. So spacetime, to Kimball Kinnison and his crew, is also rectangular, just like Earth's spacetime.

However, when the people on Earth look across to the moving ship, they see its spacetime grid altered. Fig. 6 shows what the ship's coordinate system looks like at the instant the ship passes Earth, so that both Earth and ship are at the origin (x = 0 and t = 0). The ship's grid is distorted. Its x-axis is leaning up, and its t - axis is leaning to the right. The two axes are no longer perpendicular to each other. We call the ship's axes x′ and t′.

Remember that the x-axis represents all the places where time is zero in the Earth frame. Likewise the x′-axis represents all the places where time is zero in the ship's frame.

Now suppose we blow up a Klingon ship at point A along the x′-axis, some distance away from Kinnison's ship. This explosion takes place at zero time according to the ship's clock, but it is not zero time according to Earth clocks. We can calculate what the Earth time is by using the Lorentz transformation equations.

Let's put in the following numbers: Kinnison's ship is just passing Earth and traveling at half the speed of light. The Klingon ship is

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10 light-years away from Earth when it is blown up (in Earth's reference frame). But, as Kinnison sees it, the explosion is only 8.66 light-years away. And, as the Earth people see it, the explosion takes place 5 years after the starting time, rather than at time zero. (In technical terms, we say the coordinates of the explosion are $x = 10$ Ly and $t = 5$ y in the Earth frame, while $x' = 8.66$ Ly and $t' = 0$ in the ship's frame.)

Notice that both space and time are transformed. Kimball Kinnison finds that the distance to the Klingon ship is less than the 10 light-years measured by the Earth-bound observers. This difference demonstrates the famous Lorentz-Fitzgerald contraction of space. It arises because Kinnison's ship is moving relative to Earth.

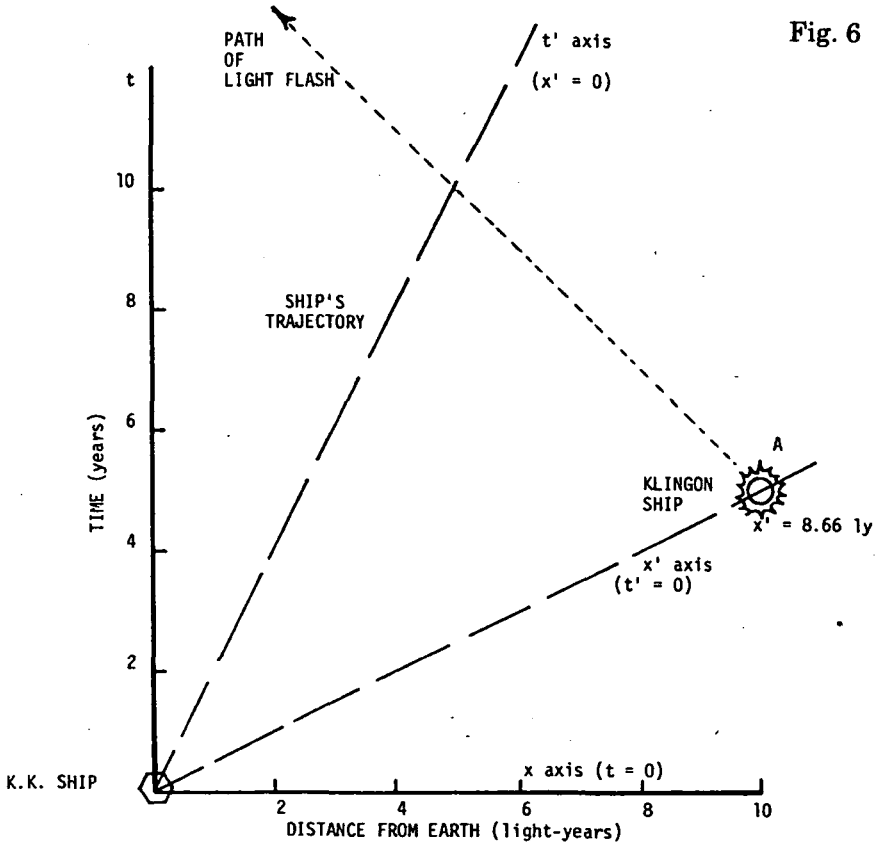

Fig. 6

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This story also illustrates what we were saying previously about simultaneity. All events happening along the line marked $t = 0$ (the x-axis) are simultaneous according to the Earth observers. But according to the people on the ship, it is the events happening along the line marked $t' = 0$ that are simultaneous. And these are a different set of events. So the people on Earth and the people in the ship disagree about what is meant by the word simultaneous. To the people in the ship the blowing-up of the Klingon ship is simultaneous with the instant their clock hits zero. To the people on Earth, the explosion happens when *their* clock hits 5 years. (Notice that the people on Earth don't actually see the explosion until the flash reaches them at 15 years.)

So precisely what do we mean when we talk about sending a message instantaneously? An instantaneous message is transmitted and received simultaneously. But if either the sender or the receiver is moving (or, to be exact, if one is moving relative to the other) then it is not possible for the message to be instantaneous to both the sender and the receiver. If it is instantaneous to one, it is not instantaneous to the other.

Immediately we are in trouble.

There is a way out. We can make the following rule: let the transmitter decide on the meaning of instantaneous (and simultaneous). Suppose, for example, we send a message through a wormhole from one part of space to another. The wormhole has to pass along some particular path in spacetime—some particular line on a spacetime diagram. The simplest way to do it is to say that the wormhole will travel along the x-axis in the reference frame of the transmitter. So a wormhole projected from Earth will go along the line $t = 0$, while a wormhole projected from the moving spaceship will go along the line $t' = 0$. (Or along a line parallel to it, depending on where the ship is when it sends the message.)

Let us now see what consequences this assumption generates.

4. Consequences of Instantaneous Communication.

Consider the following scenario: Ten years (Earth time) have passed since Kimball Kinnison's ship left the vicinity of Earth. Fig. 7 shows how things are arranged now. Earth has moved up the time axis to the 10-year point. The ship has moved along its trajectory, and has traveled 5 Ly at half the speed of light, according to Earthly measurements. Of course, the people in the ship see things differently. They are of the opinion that they have gone a distance of 4.33 Ly in a time of 8.66 years.

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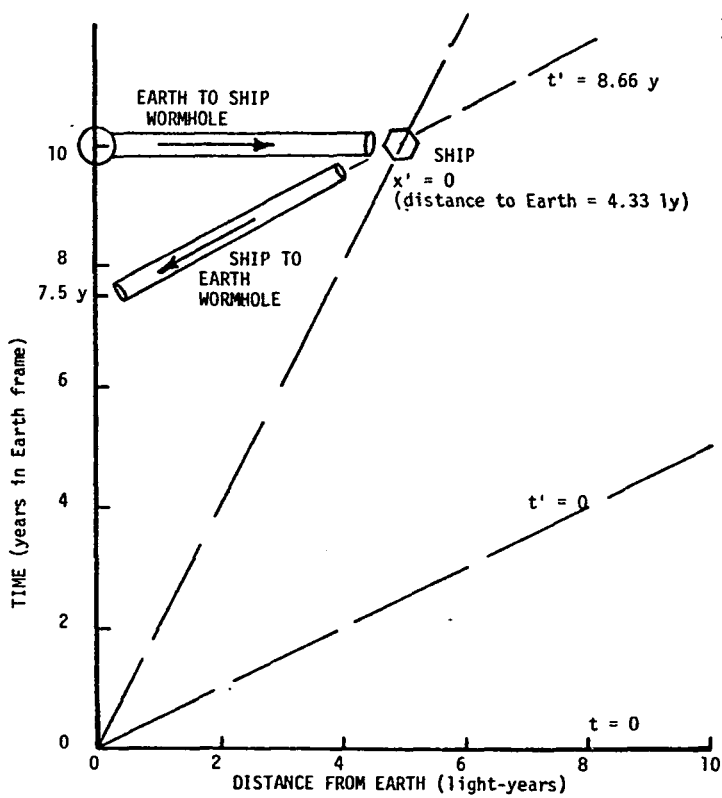
Now, suppose the people on Earth project a wormhole out through space to the ship. And let us assume that messages can be transmitted by radio through this wormhole. The wormhole, as we agreed in the last section, takes no time to get from one place to another. Or, let's say, it tunnels through space, starting from the Earth's position, and it comes out 5 light-years away at the same instant of time. So its path is represented by the arrow going from Earth to ship, parallel to the x-axis.

Just to make things specific, let's assume that the ship passed Earth on Jan. 1, 2100. This is when all the clocks were set. The message leaves Earth 10 years later, on Jan. 1, 2110, and reaches the ship at the same time, according to the Earth point of view. But on the ship, the message is received at the 8.66-year point. If Earth

Fig. 7



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is broadcasting news of New Year's, A.D. 2110, the ship will receive that news in August, 2108, ship time. It is as though the message has gone backward in time while going from Earth to the ship.

Now what happens if the ship replies to this message from Earth? First, we have to decide how this message is going to travel. One way of doing it is simply to have the ship send its reply straight back through the Earth's wormhole. After all, if the pipe has two ends, there's no reason why it shouldn't work equally well in both directions.

Or is there?

It turns out that there is a very powerful reason for thinking this scheme will not work, simple though it sounds. If we use the wormhole as a two-way tube, the message from Earth to ship travels toward the past—from January, 2110, to August, 2108, while the message from ship to Earth travels toward the future—from August, 2108 to January, 2110. There is a difference—an asymmetry—between the Earth and the ship.

Imagine what would happen if there were ten ships out there all going away from Earth. Earth sends wormholes out to all ten ships, and it knows its messages go toward the past to reach these ships. The ships, on the other hand, have to send their messages toward the future to reach Earth. The Earth can now say: I am unique, because I am the only one whose messages go toward the past. As a result Earth can claim that it is absolutely at rest, while it is the ships that are in motion.

But this violates the most fundamental postulate of relativity—the idea that there is no privileged reference frame—no frame that can be considered "absolutely at rest." If we say a ship is in motion relative to Earth, we can equally well say Earth is moving relative to each ship. There should be no way to tell the difference.

Putting it another way: suppose an observer on a ship is monitoring radio waves coming from Earth (without wormhole). Due to the Doppler effect he finds the frequencies shifted downward. He can explain this by saying it's because his ship is traveling away from earth. Or he can just as well say it's because Earth is traveling away from the ship. It makes no difference. Furthermore, an observer on Earth, looking at the radio waves coming from the ship, will find them shifted downward also. All that counts is that Earth and ship are moving apart, and the Doppler effect shifts the frequencies downward, no matter who is doing the measurement.

And so it must be with the wormhole communication. If the message from Earth to ship goes toward the past, then the message from

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ship to Earth must also go toward the past. That makes the situation completely symmetrical, as required by the fundamental postulate of relativity.

On the other hand, we could turn the logic around. We could argue that *if* a wormhole allowing two-way conversations existed, *then* that would prove the fundamental postulate of relativity to be invalid. This conclusion would delight many people. But the proof of the pudding is in the eating. First you have to get a wormhole.

So now we go to another argument. We begin once more with the message sent via wormhole from Earth to ship, transmitted January, 2110 (Earth time), and received August, 2108 (ship time). The ship now sends a reply to Earth through its own wormhole—that is, a wormhole transmitted by the ship's own generators. If we play the game according to consistent rules, the message must go instantaneously from ship to Earth, according to the *ship's* clock—that is, in the ship's reference frame.

That means the ship's wormhole must lie along a line that represents $t' = 8.66$ years on the diagram. This line will pass through the ship's position and will be parallel to the line labeled $t' = 0$. Since all points on this line represent the same time, I call this the ship's *Synchrony Line.*

A message going along this line will reach Earth at the 7.5 year point (Earth time—that is, in July, 2107.

Now see what we have done. The original message left Earth in January, 2110; and the reply reached Earth in July, 2107, two and a half years before the original message was sent. Here we have all the ingredients for a time travel paradox. While the characters themselves have not traveled through time, sending messages into the past is good enough.

For this is the kind of thing that can happen. Sometime in 2109 a disaster happens—say the assassination of a president. In 2110 a message is sent to the spaceship telling them of this event. The ship immediately sends a message to Earth, informing them of the assassination. Since Earth receives the message before the assassination took place, the authorities are able to apprehend the assassin before he fires the shot. But then the assassination never takes place, so no message is sent to the ship. So no warning is received by Earth, and the president is killed. So a message is sent to the ship . . .

And so we go around and around.

This is a paradox. A real paradox.

The instantaneous communication allows us to set up a situation

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that has contradictory elements. If it happens, it doesn't happen. And vice-versa.

Now I could use this argument to say: the existence of the paradox proves that instantaneous communication is impossible.

I will almost say it, but I'm going to leave one little loophole, one little hedge. In the last few years I have become very cautious about paradoxes. The reason is that I, myself, with my own hands, did an experiment whose results were paradoxical within the framework of our ordinary concepts. (See "On the Fundamental Mystery of Physics", *I.A.'sS.F. Magazine,* September, 1979.) The only way to understand the experiment is to get a new set of concepts.

In a similar vein, I will say that *if* some means of instantaneous communication were found, *then* it would require us to invent a new set of concepts concerning the structure of spacetime. A set of concepts that allows the paradox to exist, that allows two contradictory events to take place. Something like an alternate-universe kind of theory, where the president is assassinated in one branch of the universe, and is warned against it in another branch.

But aside from that possibility, the existence of the paradoxes makes instantaneous communication very hard to swallow.

We can ask this question: what about communication just a little bit faster than the speed of light instead of instantaneously? It turns out that the conclusions reached in this article apply to any kind of message sent faster than light. The only thing different would be that the path of the message on the spacetime diagram would not lie along the synchrony line, but would have a different slope. But there would always be some range of velocities (both ship and signal) that would give a trajectory going into the past, and so would result in time-travel–type paradoxes. I have chosen to talk mainly about instantaneous communication because the arithmetic is easier to do and the diagrams are easier to draw.

Furthermore, everything we have said about transmitting signals faster than light also applies to solid objects traveling faster than light. A spaceship going faster than light could get into the same kind of paradoxes I've been describing. Therefore the arguments against FTL communication are also arguments against FTL travel.

5. Conclusions.

The trajectory of a signal is a straight line on a spacetime diagram. We have seen that a line that represents instantaneous transmission of a message in the Earth's reference frame *cannot* represent instantaneous transmission in the frame of a moving ship. Or, to put

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it another way, if the two ends of the transmission line are synchronous in one frame, they will not be synchronous in another frame. (By synchronous, I mean that they exist at the same time.) Therefore there is no meaning to the phrase "instantaneous transmission of information," because the sender and receiver cannot agree on what is meant by that statement if one is moving relative to the other.

If we want to keep consistent with the laws of relativity, we can make the assumption that the transmission will be instantaneous in the reference frame of the transmitter. Then if Earth transmits to a spaceship moving away from Earth, the message goes toward the past. If the spaceship replies to Earth, the reply again goes towards the past, so the reply reaches Earth before the original message left, making possible a number of time-travel kinds of paradoxes.

There is also the possibility of making a fortune in stocks and commodities by having a confederate on the ship transmit to the past information about what prices are going to do in the future. But if you do it too much, your purchases will themselves have an effect on the market, so once more we get into a paradox.

You could, of course, avoid all such complications if you made sure that the sender and receiver were at rest relative to each other. (Or at least not moving very fast.) Then you could communicate between planets, but not between planets and ships. Such a scheme would require a very particular and peculiar kind of transmission, a communication system that fades out when the receiver, or transmitter, starts moving too fast.

So Kimball Kinnison is on his way to Capella, and before he picks up speed he can contact the Capellans through his lens, but once he gets past a certain minimum speed, the transmission fades out and he is now incommunicado.

I don't know of any logical arguments that would rule out that kind of possibility, except that in physics we never deal with signals that can be detected only when you are at rest relative to the transmitter, and disappear when you are moving. I don't know what that means.

APPENDIX

The Lorentz transformations are equations that allow us to calculate the coordinates x and t of an event in one frame of reference if we know the coordinates x′ and t′ of the same event in another

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frame of reference (or vice versa). We will let x and t be the position and time of an event as seen by the Earth observer, while x′ and t′ are the position and time of the same event as seen by Kimball Kinnison, in his spaceship moving with velocity v relative to Earth. In the example we are going to consider, the spaceship is moving at half the speed of light, so v = 0.5c, or v/c = 0.5.

A common factor in these equations is the quantity

$$G = [\, 1 - (v/c)^2 \,]^{-1/2},$$

which in this example has the value 1.155. Using this abbreviation, the transformation equations become:

$$t' = G(t - vx/c^2) \quad (1)$$
$$\text{and } x' = G(x - vt), \quad (2)$$

while in the other direction they are:

$$t = G(t' + vx'/c^2) \quad (3)$$
$$\text{and } x = G(x' + vt'). \quad (4)$$

In working with these equations we use years (y) for units of time, and light-years (Ly) for units of distance. The speed of light then becomes, conveniently, c = 1 Ly/y.

The ship is located at the origin of its own coordinate system, so the position of the ship is given by x′ = 0. Putting this value into Eqs. (3) and (4), we find, to no one's surprise, that x/t = v, the velocity of the ship in the Earth frame. This equation represents the trajectory of the ship in the Earth's frame, while on the spacetime diagram, the quantity

$$t/x = 1/v = 2 \text{ y/Ly}$$

is the slope of the trajectory line. (It is also the t′ axis, since it represents the set of points for which x′ = 0.)

Similarly, we get the x′ axis by setting t′ = 0 in Eqs. (3) and (4). After dividing (3) by (4) we then have

$$t/x = v/c^2 = 0.5 \text{ y/Ly}.$$

This is the slope of the synchrony line—all the points in the ship's frame that exist at the same time, as seen in the Earth's frame.

In Fig. 6, we have an event that takes place on the ship's synchrony line (t′ = 0), and 10 Ly away in the Earth frame. Setting t′ = 0 in Eq. (4), we find x′ = x/G = 10 Ly/1.155 = 8.66 Ly. The time t in the Earth frame can be found from Eq. (3) by putting in the above values of t′ and x′, to obtain t = 0.5 yr.

In Fig. 7, the ship has been traveling for 10 years (Earth time)

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at half the speed of light, so in the Earth frame, $t = 10$ y and $x = 5$ Ly. In the ship's frame, $x' = 0$, so from Eq. (3) we find $t' = t/G = 10$ y$/1.155 = 8.66$ y. The way it looks to the people in the ship, Earth has been going away from the ship at half the speed of light for a period of 8.66 years, so the distance to Earth is 4.33 Ly, instead of 5 Ly.

We want to find the time (t_1) when the wormhole from the ship reaches Earth. Earth is at the point $x = 0$, and the wormhole leaves the ship and arrives at Earth at the time $t' = t/G$, where $t = 10$ y. From Eq. (1) we have

$$t' = Gt_1 = t/G,$$

so: $t_1 = t/G^2 = 10/1.155^2 = 7.5$ yrs.

THIRD SOLUTION TO WEIRD NUMBERS FROM TITAN
(from page 76)

Remember HAL, the computer in the movie *2001*? If you shift each letter of HAL one step forward in the alphabet you get IBM, whose logo is clearly visible on the computer in the film. Shift each letter in VOZ thirteen steps (regard the alphabet as cyclical) and you also get IBM.

Since 13 is half of 26 we can describe the transformation in a more dramatic way. Write the 26 letters of the alphabet in a circle, then for each letter of VOZ substitute the letter diametrically opposite.

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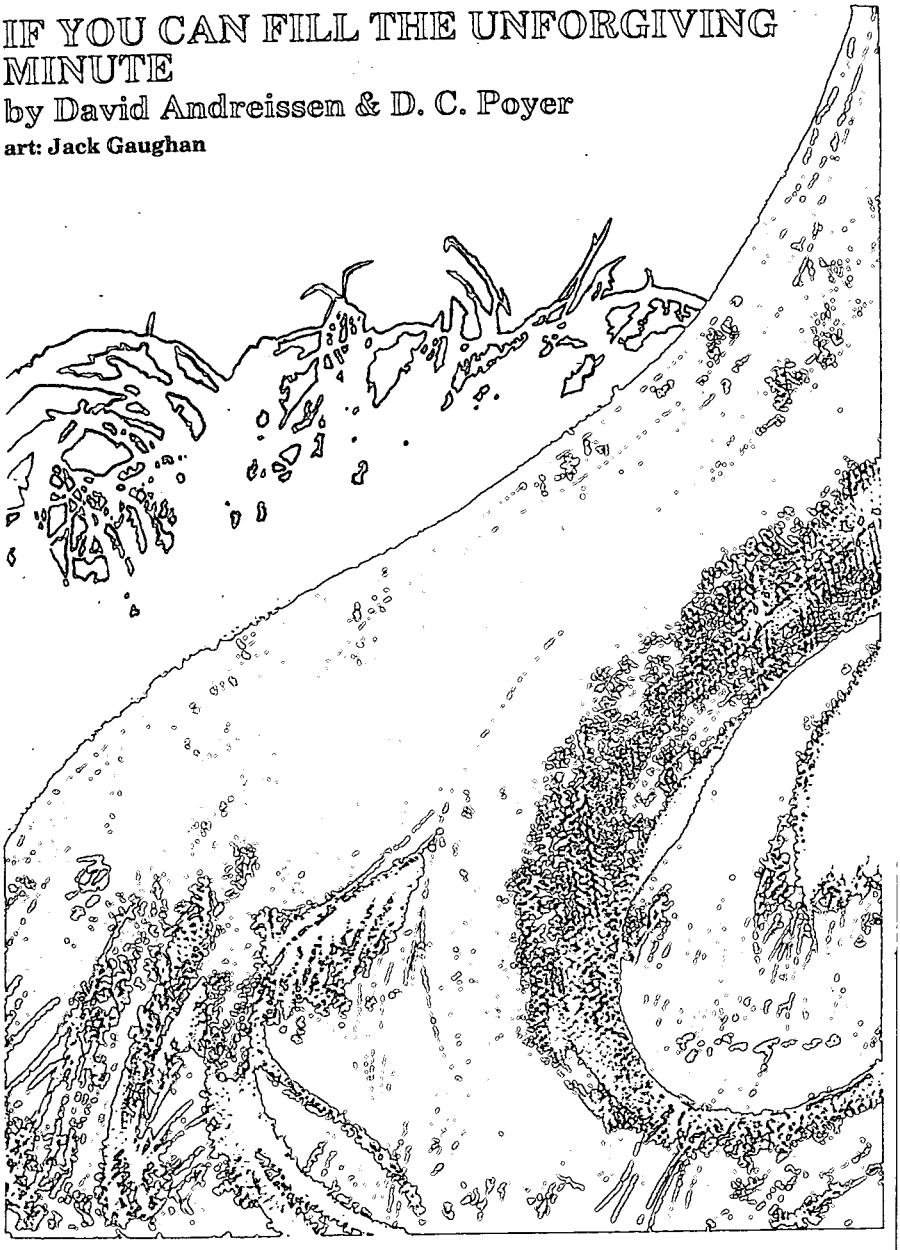
IF YOU CAN FILL THE UNFORGIVING MINUTE

by David Andreissen & D. C. Poyer

art: Jack Gaughan



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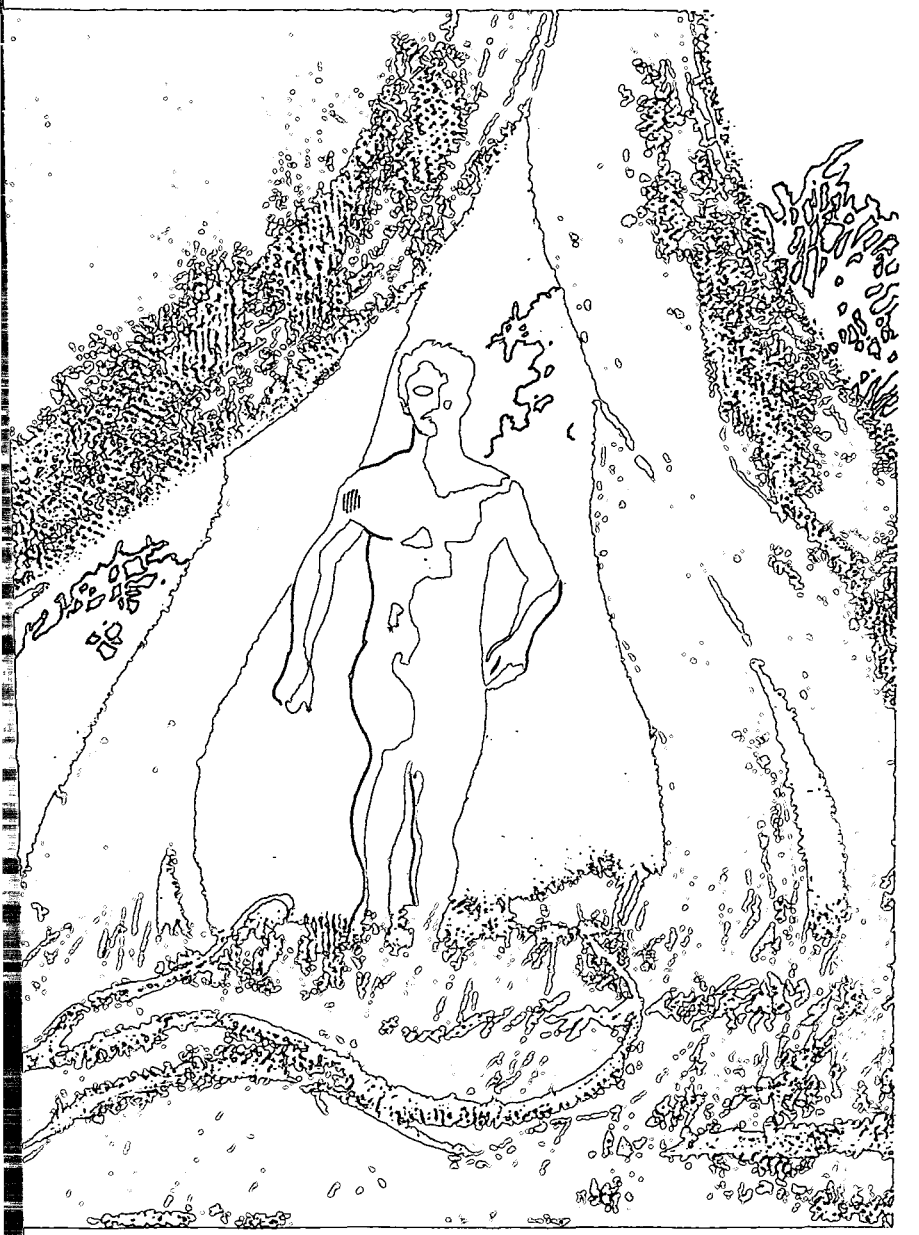

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Mr. Andreissen, a full-time free-lance writer who now lives in Norfolk VA, expects his first SF novel, The Edge, *out from Donning/Starblaze soon. Like his collaborator, Mr. Andreissen SCUBA dives and sails when there's time to.*

"And yes, I know," Gerald Corcoran continued after the pause that always followed his favorite poem. "It's sexist, racist, and terracentric. Kipling. But in his day, kid, Earth was all there was, though you're a little young to remember."

"I've heard that piece before, sir," said Ayid Hafouz, hanging the last of his clothing in his locker. Po-xiang, the Cantonese trainer, moved silently about the athletes' ready room. "In my English classes. You know that I will run as well as I can, coach. It is just that I am not a sprinter."

"Neither is he . . . it . . . whatever." The American, red-faced, tall but getting heavy, stalked nervously around the ready room, punching his fist into his hand. "I know you'll do your best, kid. You didn't get to Olympia from that godforsaken watering hole of yours—"

"Al Jarzhireh," the boy murmured, extending his right leg to the trainer. He winced a little as Po-xiang knelt and began to rub an emollient into the long stringy muscles; his right knee had been giving him trouble, a vague ache deep within. Corcoran, ignoring the interruption, talked on.

Ayid stared down at his thin, brown legs. Po-xiang, his round face intent, worked silently and steadily, moving from the thighs to the hard, resilient calf muscles, his short powerful fingers digging deep, loosening the pre-race tension.

Five years, Ayid was thinking. Five years from the bare sun-scorched hills of PanArabic Algeria. Years of steadily harder training, first at the national camp at Tarabulus, later at the Olympic camp itself in Ireland. Then, after his upset victory over the Atlantic Union and Soviet Federation distance champions in the 2084 games, to the special camp in Colorado.

Where he had met Corcoran and his team, and learned, really, how to run.

A long trip. *How many kilometers have you run in your life, Ayid?* The coach's voice went on unheard as he drank the glucose-and-water solution the trainer poured for him. *How many miles?* Run-

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ning the hills barefoot, for shoes were still scarce in his village. Running since before he could remember to herd the family's four camels, six goats, and to pick up their valuable dung before the other children could pounce. The M'zab, the 'puritans of the Desert,' still clung to the old ways—tradition, the Qu'uran; even irrigation was mistrusted as desecrating the land Allah had willed to be desert. Ayid had grown up in the faith, wanting no other life, running for pleasure along the long sun-shimmering ridges of sand that dragged at his feet and made his heart pound and breath wheeze in his throat. And then one day the Minister for Arab Sport had come to Al Jarzhireh to see the wind whipping at the burnous of a figure that ran, ran, almost keeping pace with the aged khaki Rolls-Hover. . . .

A hand fell on his shoulder, and he glanced up. The American looked angry. "Look, kid, I know it's close to race time, but how can I coach you if you won't listen to me?"

"I am sorry, Mr. Corcoran. What were you saying, sir?"

"I want you to lead all the way. A fast start's a fast finish, so I want you off the beam fast and give it all you've got right up to the end. It's a hell of a long sprint, but that's got to be our strategy."

Ayid nodded, got up, and stretched. His naked body, loose now from the massage, felt strong and supple. He bounced on his toes, feeling the Achilles tendons taut as drawn bowstrings.

"How do you feel, Ayid?" said Po-xiang.

"Very good, Wang. I feel light, somehow."

"About a kilo," said Corcoran. "Olympia's point-eight-five Earth normal. Should help your times a bit . . . but it might help *them,* too."

"How far is it this first time, again, coach?"

Corcoran pulled out a black notebook and flipped pages. "The Chircurgi just came out with the schedule . . . wait a minute, they measure everything in these damn Mediational units . . . yeah. First race, today, one hundred Mediational standards. Comes out to 270 meters."

"A dash?"

"Push it all the way, like I said. We're really depending more on Southren and Kwarafa in this first race, but I want you up front. Second race, tomorrow, five thousand standards, a little over thirteen thousand meters—seven-plus miles; that'll be a good race for you."

Ayid felt fear in his stomach, but did not allow it on his face. It was an old companion before a race. The M'zab did not believe in

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showing fear or any emotion, and he had learned how to bottle it up inside himself until the final second when he poised toppling at the starting line and the crack of the pistol converted all fear to desperate energy. He spread thin brown fingers on the bench and said quietly, "And the third race, sir? Do the Dhelians have an event as long as our marathon?"

The American hesitated. "Longer," he said at last. Po-xiang looked up in surprise from Ayid's feet, which he was massaging, bending them far back to stretch and warm the tendons.

"Longer than a marathon? *Bism'Allah*—I mean, how much longer, sir?"

"Eighteen thousand standards," said Corcoran slowly. "Forty-eight kilometers. A little over thirty miles."

Olympia, as the Terrans called it, was a beautiful world. Ayid stood in the center of the field in a warmup suit, jogging in place, and looked about him.

The track, where the first two events would take place, lay in the center of a (natural?) bowl of low hills. Across from him, built up along the sides of the bowl, were seating areas, already filling up with spectators from the spaceports and hotel areas to the east. Teams of officials, holo personnel, and police were busy around the edges of the track.

The track. This was the first time he had seen it in daylight. Dhelian-style, it was longer than standard Earth tracks, and laid out in a figure-8 rather than an oval. Under the bluish-white, tiny, hot sun, the close-cropped 'grass' around the track lay all in one direction, as if combed. It sparkled oddly, as if diamonds were scattered about in it. The running surface itself, some ten meters wide, was natural; it seemed to be of a mosslike plant, moderately hard, but feeling good to his bare feet as he stepped out on it to begin his stretching routine.

He moved slowly into the warmup. Designed for him by Corcoran's bioengineers on Earth, it stretched and warmed every running muscle and every joint and tendon. The warmup suit itself was electrically heated at calf, thigh, arm, and neck. As he moved out for a slow lap he was already sweating despite the thin, cool air.

He took it slowly, testing the surface and the effect of the loop. Better for the longer races, he saw, since the curves were taken in opposite directions. The moss was soft under his bare feet, yet gave good traction. He rounded the first turn, which was banked to the right, and found himself face to face with the Dhelian spectators.

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His first thought was, how human they look; his second, a feeling of devout Moslem shock at their lack of clothing. Stacked up the sides of the hills, their faces seemed like those of any human crowd. There was a low murmur as he jogged past them, then a burst of sound. Ayid could not tell if they were applauding, or jeering. Did Dhelians jeer?

A strange people, he thought, leaving the turn and entering the second straight. Lifting his head, he accelerated smoothly to about three-quarters of his full sprint speed, knees high, legs reaching out for distance, arms pumping smoothly, every muscle that was not working relaxed. Through his mind ran what little he knew of this oddly humanoid race.

Earth had been discovered in the early 21st century. Not by Dhelians, but by another Mediational race of scales and many arms and quick reptilian movements—and a capability of calculating profit instantly to the thousandth of a per cent: the Chircurgi. Mankind could have fought several of the wars it so much enjoyed for the price the Chircurgi asked for their stardrive; but in the end, the UN had paid.

Ten years later, when the first Earthbuilt starship had triumphantly docked at a Dhelian planet, mechanics at the port offered the crew a complete set of blueprints for the equivalent of $12.95. To add to their fury, the humans learned that the plant derivatives they had bartered away were far more valuable in a galaxy-wide market than they had ever been on Earth.

How the Dheils must have laughed, Ayid thought, feeling a rush of shame. Not for himself . . . but for all human beings.

The Dhelians, the Dheils. The dominant race, if there was one, of the sixty races of the Mediation. Reassuringly humanoid, after the Chircurgi; but so far superior to humans in everything human that to the natural Terran resentment at being bilked by aliens was soon added a racial inferiority complex. Naked, tall, beautiful, intuitively intelligent, the sexless Dhelians were humanity as it might be in another million years. Every human envied them, wondered about them . . . and hated them.

Ayid slowed after three laps, evaluating his body. He felt good. The bothersome pain in his lower legs was nothing and would not even be felt during the race. His lungs felt good and his head clear. He felt full of energy; the four days' rest on the ship from Earth had done him good, as had Po-xiang's massages and diet supplements. Though it was wearying, Ayid thought, to have to fend off some of the things—forbidden things, by the severe M'zab laws—that Cor-

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coran wanted him to take.

He was ready for this race.

Sunlight glinted blue from multiple lenses as he swung off the track in front of the Terran stands. The holo teams were set up to transmit. The Working Press had arrived.

"There he is. Hey, Hafouz!"

"Abe Berenson, UBC," said a fat man, a gyroed stereo minicamera perched on his shoulder like a pet owl. "Your impression of the Dhelian runner, what's his name, Tseil Laol. Over-refined? Can human go-getiveness—"

"People's Network," a dark woman broke in. "Brother Hafouz, can you make a statement about the—"

"Clear out!" Corcoran's bull-roar made Ayid jump. "You there! Get away from him!" Reporters scattered as the American charged through them, but quickly recovered, clustering around the coach as Ayid stammered and blushed.

"Coach Corcoran—statement for the press?"

"Damn vultures. Okay. But get back a little." He stuck his hands in his pockets as silent cameras focused on him and on the gray-suited runner, sending the flat red face of the American and the thin dark visage of the Algerian bolting out over hundreds of light-years . . . via Dhelian equipment that Earth engineers did not begin to understand. "Here's your statement. Ayid, don't stand there, keep warming up. Okay.

"As you know, today is the first running event of the 15,614th Mediational Sports Convention. Sort of an interstellar Olympics, held roughly every eleven years. This is the first Convention that Earth has been invited to. We have entries in a few other events—zero-gee-dancing, long jump, a weight-throw, skiing, personal combat. Think we have a K-ball team though it's not ready for the majors yet in my opinion. But we're not favored in those. There are other species in the Mediation that can swim like barracuda, put a hundred-kilo shot over a mile, high-jump ten meters under three gee's.

"But mankind—we're a running animal. Have been ever since we grew up out on the African savannah.

"So I think we've got a good chance in this event."

"Are the xogs good runners?" asked the woman who had called Hafouz 'brother.' Corcoran looked at her. She was very pretty but suddenly he felt that if he got to know her he would not like her.

"They're not 'xogs'—I don't like that word. Yeah, they're good runners. Their skeletons and muscle structure seem almost like

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ours. Major differences are sexual organs . . . and maybe the brain. Maybe."

"Coach Corcoran. One last one. Can Ayid win?"

"Well, in the longer distances, he's the best we've got. But remember, it's a team effort. Kwarafa and Southren have to do their jobs in the dash and middle distance to give us a win overall." He took his hands from his pockets and glanced after Ayid. "Got to go now."

"RUNNERS FOR FIRST EVENT ASSEMBLE AT STARTING POINT," echoed between the hills. The announcing system paused, then repeated itself in several other languages. One of them—smooth, softly voweled, rapid—was Dhelian.

"Five minutes, kid," said Corcoran, stopping just inside the door of the ready room.

Ayid looked up, nodded, then placed his head to the floor again. He would finish the long Sura, the 72nd, always one of his favorites and one he had learned by heart:

> . . . the gods whom they call upon beside Him, they shall not be able to intercede; they only shall be able to intercede who bore witness to the truth.
>
> If thou ask them who created them, they will be sure to say "God." How then can they hold false opinions?
>
> And it is said, "Oh Lord! Verily these are a people who believe not."
>
> Then shalt thou turn from them, saying "Peace." For in the end they shall know their folly.

He salaamed three times—not in the direction of Mecca, for who could know the true direction of Mecca here, but toward the east, toward the morning sun—got up, rolled up the prayer rug, and placed it carefully in his locker. He held out his arms and Po-xiang slipped off the warmup suit. Underneath it he was naked. His brown skin, paler around midriff and thighs, gleamed with oil, and the long dark hair of the M'zabite male was tied back. He looked at the floor and not at the other two men, but his voice was low and fairly steady as he said, "I'm ready."

"Chemistry?" said Corcoran.

"Number one," said the trainer. "Took them just before he started to pray."

"Sugars?"

"Final stage was at minus ten. Hundred CC's straight G. Decay

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starts in fifteen minutes. Race'll be over long before then."

"You give him anything else?"

"He didn't want it," said the trainer, eyes expressionless.

"Maybe he'd better," said Corcoran tentatively. "The rules here are different than on Earth. Anything goes, implants, drugs—"

"No drugs," said Ayid. "Sir."

"Well, it's just a sprint; we're really counting on Terry and Kebe." Corcoran thumbed him toward the door. "But I'd like to be surprised, Ayid."

Applause swelled around him as Ayid jogged out into the open air. Blushing—he felt his nakedness keenly, though Dhelian rules demanded it and the Kharidjite elders had approved it.

"Big crowd, Ayid." Beside him, a short, stocky runner, dark as ebony; Kebe Kwarafa, the PanAfrican who had startled the world by running a hundred meters in 9.2 seconds in 2084. "Going to win this one?"

"I will try hard. But you're the one who will win. It's your distance."

"Maybe." The African put out a hand, stopping Ayid in mid-trot. They walked together toward the starting line. Ayid felt nervous perspiration chill on his skin. "Listen, Ayid. You must save yourself a little. This is only the first race, you know."

Ayid slowly turned his head and stared at him. Kwarafa's broad features were contorted with strong emotion. "What do you mean, Kebe? Only the first race? These are the Mediationals!"

Kwarafa's muscular arm chopped into the air, pointing. "Yes . . . but how can we defeat *that*?"

"Allah," said Ayid softly.

An angel stood at the starting line, shifting easily from foot to foot, looking up toward the Dhelian stands.

Tseil Laol Laia. Ayid recognized the proud line of the back, the tawny hair, from numberless training holos. But the reality was breathtaking. The long, spare, graceful legs, hairless and golden brown. Tawny reddish hair flowing back from a massive forehead and down the slim neck. Terry Southren, the Australian middle distance champion, looked squat and animalistic beside Laol as he walked by him to his own lane. With horror Ayid saw his own number, four, on the lane to Laol's right.

Two other Dhelians walked rapidly toward the line as the one-minute call sounded. A murmur from the crowd filled the valley. Ayid winced as something hard struck his shoulder. It was Kwarafa's solidly muscled fist. "Remember, Ayid . . . save a little for the

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next two races."

"Good luck, Kebe."

An odd thing to say to a runner, thought Ayid, stepping into his lane. Then he glanced to his left, and the conversation with the PanAfrican was wiped from his mind.

He was looking into Tseil Laol's eyes. Vast, golden, godlike eyes . . . the eyes of a *djinn,* almost of Allah himself. Wise, compassionate, strong. . . . "Hello, Ayid Hafouz," said the Dheil.

"Ah—" he stammered, ducking his head. Blood rushed to his face. He was as tall as the other runner but felt like falling to the ground before him, felt like prostrating himself before this godlike man—

Man? Ayid stared speechless at the other's groin. He had read of it, of course, but it was different *seeing* that smooth tuck of skin, hairless, devoid of any sex at all . . . he wrenched his eyes up to see a slight smile on the Dheil's lips. "Run hard," he heard him say softly, in near-perfect Standard English. "And let the best between us have the victory." He extended a slim golden hand. Ayid stared, unable to believe it was for him.

"RUNNERS, TAKE YOUR MARKS."

Reflex snapped him down, to the blocks. They weren't there. Belatedly he remembered Dhelian abhorrence of all artificial aid to sport, even though Mediational rules permitted it; apparently that included blocks. He decided on a bunch start and dug his bare toes into the soft surface. Hunkering down, he glanced quickly to left and right. Alone now in their lanes, the three Terran and three Dhelian runners were withdrawing into themselves, readying their minds and bodies for the few explosive seconds that would determine the outcome of the sprint. Ayid looked down at his hands. The mossy surface of the track smelled like crushed cinnamon, and this close to it he could see the weblike interlocking of the rough flat leaves. He breathed harder, feeling the surge of energy in his legs and in his blood as he called on Allah a last time and fixed his eyes on the starting beam.

"SET."

The crowd saw and the holo cameras sent the line of six backs rising at once, six heads drawn up, six muscled bodies tensed for the start. A soft sound rolled across the valley; the indrawn breaths of thousands of spectators, both human and Dheil.

The glowing beam snapped off. Ayid, his body already in flight as his mind recorded it, exploded like a breaking spring. His toes drove thudding into the soft soil of Olympia. With shock, he realized that he was looking at four rapidly departing backs, two of them

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human, two Dhelian. He was still bent far forward, still accelerating, but they were already in full sprint. The ten-standard line flashed past almost unseen, and then he hit his stride and put all he had into shoving with the long hard muscles of his thighs and calves.

"Push it!" said Corcoran in his ear, the command tinny and distant through the transplant mike and mastoid. *"You can still catch up. Push. That's it!"*

Not used to this. Ayid bent forward farther and concentrated on reaching for distance. Head up now. Were the backs a little closer? The tall form of Tseil Laol was just ahead. Beyond him, Southren. Kwarafa and the remaining Dheil were in the lead, and seemed now to be drawing ahead.

Another line. Thirty standards. Seventy to go. *At full speed like this, how long can you last, Ayid?*

But he could see the distance closing between himself and Laol, who was running smoothly, gracefully, heels flashing alternately and rapidly in the sun as Ayid closed from behind. The roar of the crowd seemed deafening. The track flashed by, blurred with speed. Laol just ahead now, on his left, the runners still in their marked lanes. Ayid stuck to him stubbornly, wondering where the third Dhelian was. Behind him. But how far?

Fifty standards. The midpoint. *"Thirteen even,"* came Corcoran's voice, excited. *"Good, but—lengthen your stride. Get that head up!"*

He jerked up his head, feeling weariness suddenly grip his driving thighs. Ahead, Southren had moved up, was now between Kwarafa and the leading Dheil, and the three were running neck and neck as if glued together. The roar of the crowd grew louder, grew frenzied, demanding speed; and Ayid responded to it, the hot air sawing into his throat, arms milling desperately as if he could reach out and claw the leading runners back to him.

Centimeter by centimeter, he suddenly saw, he was gaining on the Dheil. Tseil Laol was now only a stride ahead, and the realization gave Ayid a burst of strength that carried him level with the red-haired runner.

Seventy standards, and he was straining to stay with his man when a movement ahead broke the pounding rhythm, attracting his instant attention. Kwarafa, running like a berserk machine, was drifting out of his carefully-marked lane . . . to the right. The blue glare of sky between him and the Australian runner narrowed. Southren, unaware of anything outside of his straining body, did not notice the African's slow drift into his lane. Running full out, there was nothing Ayid could do save stay with Laol, who had now

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seen him and was threatening to pull ahead again.

It happened. Kwarafa's arms merged with the blur of Southren's. At the speed they were travelling the merest contact was disaster. Southren faltered, leaning instinctively to the right to escape Kwarafa. The African, realizing his error, tried to recover his lane, stumbled, and fell. An outstretched arm brushed Southren's legs. Then Ayid was past and there remained only

"Ten left! Pour it on, kid!"

He prayed, and tried. But the sprint was too long. He was running as fast as his body would take him. His legs dragged as though through hot sand and there was no oxygen in the thin air of Olympia any more. Desperate, he spent his last reserves—he could see the scarlet beam of the finish—Tseil Laol, his twin, his shadow, had to be tiring too—a last effort, *Allah,* though his legs were leaden and the air a red shaft in his throat—

The sound became deafening as he and Laol broke the beam together two strides behind Southren and the lead Dhelian sprinter. Ayid turned it off and coasted to a slow jog, sobbing deep breaths to replace the oxygen his muscles had sucked from his blood. *"Nice running, kid,"* came Corcoran's voice. *"I think you took him there at the finish. We may have a first and a third. I saw twenty-six five for your time."*

Ayid left the track and jogged in a little circle on the turf. He could hear cheers from the Terran stands, but he kept his eyes on the ground. Though the cheering was good, a Kharidjite from the M'zab did not show emotion either in triumph or defeat. He did a few quick stretches and then jogged back toward the finish.

Kwarafa, limping slightly and supported by two PanAfrican trainers, was just reaching it. As Ayid came up he heard him apologizing to Southren. "Terry, I was at fault. Drifted out of my lane. It wasn't deliberate—"

"I know, Kebe. Don't apologize." The Australian draped a freckled arm around Kwarafa. "I'm pretty sure I had him anyway. Man, can that Maior sprint."

"RESULTS, 100-STANDARD DASH," boomed the excited tones of the Terran announcer. The field grew quiet. "FIRST PLACE: SOUTHREN, TERRY. TIME, TWENTY-FIVE POINT TWO EIGHT SECONDS BY BEAM."

Southren's face kindled in a wide Outback grin, and he held his arms aloft as Ayid and the Dhelian who had come in second—Maior, Southren had called him—slapped him and hugged him. Kwarafa hesitated for a second, then joined in, smiling broadly.

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"SECOND PLACE: AIA MAIOR LAIA. TIME, TWENTY-FIVE POINT FOUR ONE SECONDS BY BEAM."

Southren and the Dhelian, still smiling, shook hands. "I congratulate you. You are quite a runner," said Maior.

"You too," said Southren. The two looked into each other's eyes for a moment, and Ayid saw surprise come into Southren's face. "You—"

"Bear you no envy," said the Dheil. "That surprises you, does it? Then we have much to learn about each other."

The stands were emptying rapidly as the remaining times were announced; Humans and Dhelians were streaming back to Olympia Port for an afternoon of carefully segregated enjoyment. Ayid, feeling the air chilling him, said his so-longs and jogged off toward the Terran stands, where he could see Corcoran and Po-xiang waiting for him. He felt good, though as it turned out Tseil Laol had beaten him by two hundredths of a second, leaving Ayid fourth in the dash. Probably his arm happened to be up, breaking the beam first, he thought, waving to the two waiting figures. But a human, after all, had taken first. He was smiling as he reached the stands. But then he stopped.

Corcoran's face was icy, and he barely looked at Ayid. He turned to the trainer, whose round face betrayed no elation at all at the win. "Wang, I need to talk to Hafouz. Could you—"

"Sure, Jerry—but say, he ran well—" the Cantonese caught Corcoran's look and fell silent. "Sure." He walked away, toward the ready building. Corcoran watched him until he was out of earshot, then swung on Ayid, fists balled, eyes frozen mad.

"What kind of a frigging performance was that?"

"Coach—ah—ah—" Ayid stammered, amazed.

"Shut up. I'm disgusted. Fourth! You should have taken a second at least."

"S-Second? Mr. Corcoran, I'm not—"

"Don't hand me that 'ay yoom noot a spreen-tar' crap, Hafouz. If you could run a 26:42 you could have done 26:40. Hell! Two hundredths of a frigging second! You *let* that red-haired pansy beat you!"

"I was doing my best, sir." Ayid felt the blush slide down over his face, felt it burning on his naked shoulders. His hands moved self-consciously to cover his groin. He cursed himself silently, his shyness, his inability to speak out. This big red-faced Yankee, this unbeliever, made him want to—

"You don't catch on too quick, do you, Hafouz. Maybe you believe

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all this buddy-buddy crap I saw them laying on you at the finish. But this was the psych race for you and Laol. By winning this one he's achieved dominance over you." Corcoran seemed to be losing the hot edge of his temper, but his face was still fiery. "Will, kid, will. That's what wins long distance races. And you've handed him the advantage on a plate."

He turned away, looking up at the by now nearly empty stands. "They're happy because Terry Southren won. A human took first place. Great. But that's only for one out of the three races—and with Dhelians in second and third, and Kwarafa fouling out, *they're ahead in total points.*"

Ayid nodded silently. Now he understood. He had failed. Had he been giving it his best effort? Hadn't the African's warning had some effect, even if only subconsciously? Hadn't he been holding something back, leaving it to the sprinters to win, saving himself for the long, grueling trials of the last two races? "I'm sorry, coach," he said humbly.

"Here's your workout for this afternoon." Corcoran tore a page from his notebook and handed it to Ayid without looking at him or acknowledging his apology. "Finish by five. Light dinner, class five, high carbos. The team will watch holo replays in the ready room at seven. Bed at nine."

"Yes, sir," said Ayid miserably. Corcoran stared at him for a moment, then turned and walked rapidly away.

"No, it wasn't a good first race," said the pale woman, tapping the rim of her glass against her teeth. She took a sip of the violet liquid and lowered the glass to the table. Blue Scandinavian eyes examined Corcoran and the other coldly. "But if we all pull together, the situation can still be retrieved. There are still two races to be run."

The pale woman, the American coach, and two other men were sitting in one of the anonymously dim nightspots in Olympia Port. It was very late, after midnight, but around them Terran spectators in loud clothing were still discussing the races, the evening's entertainment, the strange Dhelian liqueurs, Southren's victory. There were smiles and toasts and laughter at every table but this. Here the expressions were grim and though there were glasses in front of each person there were no toasts.

Corcoran looked around at the other men as she talked; Clyde Matthews, the British ex-hurdler who coached and represented Southren, and an extremely tall and taciturn Masai, whose name was i-Zalai. He was a PanAfrican. Together with the pale woman,

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who wore at her breast the blue riband of the UN Mediational Relations Committee, they were Earth's non-judging delegates to Olympia. Corcoran took a deep swallow of iced milk and looked back at the woman as Matthews asked her, "You still think the athletes themselves ought not to be told?"

"No." A sharp Swedish-accented voice. "Young people form relationships easily, they trust easily. A locker-room friendship with one of the Dhelians could develop. The Dhelians have no idea, we feel sure, that a relationship exists. We'd much rather keep it that way for the time being."

"It's been confirmed?" said Corcoran. "About the ship?"

"Yes. The excavations are complete. It was a primitive ship compared to what they fly today . . : but it's definite.

"We are the descendants of a lost Dhelian expedition."

The tall Masai sighed wordlessly.

"This is bloody beautiful," said Matthews. "This can wipe out all the nasty feelings. Humans and Dheils—brothers under the skin. When will you announce it?"

"That depends on you gentlemen . . . and, of course, on the boys."

"Why not now?"

"We can't, Mr. Matthews. Too many Terrans hate outworlders—'xogs' they're calling them now. We've run psych extrapolations and we feel that with this prejudice—really a feeling of inferiority like all prejudice—the mass of our people would simply reject the truth, and show it by voting against joining the Mediation in the plebiscite next year."

"But with this news—"

"Wait; there's another objection. The Dhelians. You know their traits. Pride, distaste for what they see as Human pushiness, our preoccupation with technique, our general backwardness and lack of *dalanai*—their concept of honor, morality—"

"I haven't felt very much of that," said Matthews.

"You're in sports. To some extent our traditions of fair play are compatible. But our business people, scientists, political leaders . . . there's been friction, gentlemen. It's been hushed up, but believe me, it's there.

"And this could rip the lid off the whole thing."

"But if we're really Dhelians—"

"It's not that simple, Mr. Matthews. Five million years on Earth has done things to the parent stock, and I strongly suspect that the Dheils have changed too in that period of time—the merging of the sexes when they went to external reproduction, for example, where

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we've kept the old system. The few hundred people in that ship were only the starting point. In time, as they reverted to nature, adaptive radiation and isolation produced sub-races, what we used to call australopithecus, erectus, neanderthal. *Homo sapiens* was the branch that survived, but we're not Dhelians any more. To them, right now, we're a different, primitive, rather inferior race. Perhaps it's best to keep it that way."

"Why?" said Corcoran.

"Because our other choice, as things stand now, is to be regarded as degenerates. The Jukes and the Kallikaks of the galaxy, a textbook case of isolation, inbreeding, and abnormality. Of the two choices, which do you think would be better received by the Mediation? Which would the people of Terra prefer?"

With the explanation it fell into place for Corcoran and he nodded, impressed. "Yeah, I see that. Okay. But why did you tell us, then? Frankly, I'd have been just as happy not knowing."

"Now we come to the important part." The woman glanced around the noisy room without seeming to. An outburst of drunken singing from near the bar forced the men to lean forward to hear her. "These games. Sport is an extremely important part of Dhelian culture. The Mediationals are viewed on every Dheil planet; and of these games, running is by far their favorite. It sums up their values for them: individuality, fair play, natural ability, courage—and *dal-anai*. Tseil Laol Laia is a hero to every Dhelian alive. If he can be beaten by a human, our status in their eyes will undergo a quantum leap. From inferiors we can become equals, physically, at least. If in time we can impress them in other ways, artistic, scientific, perhaps someday we can reveal our discovery of the ship."

She searched their faces. Loud shouts came from the bar, then the sound of breaking glass. "And if we can do that, and be accepted as a subspecies of Dheils—"

"We inherit," said Matthews softly.

"That's right." She tapped her empty glass for emphasis. "We inherit—with our cousins—the leadership of the Galaxy."

"And if we lose in these games?" said the Masai, speaking for the first time.

"We will remain as we are. A backwater." She stared at him. "A possibility, i-Zalai, that the PanAfrican government would deplore—would it not?"

But the Masai had gathered his cloak of silence about him again, and only stared back at her as the drunken singing welled up again around them in the dark.

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§ § §

One, Two, Three, Four.

One, Two, Three, Four.

On his back on the prickly short grass of Olympia, studying the hard metallic sky. His left leg doubled under him, Ayid forced his knee down again and again, loosening and stretching the groin and upper thigh. Forty reps, till all pain was gone and the action smooth as warm oiled metal. Then the other leg, a little more carefully because of the odd feeling in the knee.

One, Two, Three, Four.

He bounced to his feet and sprang up and down, feeling the good tautness in his thin ankles and long knotted calves at the limit of their stretch. A fine sheen of sweat gleamed on his dark skin where neck and wrists and feet emerged from the gray warmup suit. "Squats now," said Po-xiang, who was holding the workout clipboard. Ayid began jackknifing to the ground and up again rapidly. "Slow down," said the trainer. "These are stretches, not calisthenics. Take them slow and concentrate on the muscles. Feel the blood flowing to them. Feel them warm in your mind."

"How's he look, Wang?"

Ayid went on with the stretch, not wanting to meet his coach's eyes. He still felt guilty from the day before and was resolved to redeem himself today.

"Good, Jerry. He took in five thousand calories last night and a balanced two thousand this morning."

"Tests?"

"Half an hour ago. CPK back to normal. Urine protein a little elevated but within normal limits. BUN low normal, electrolytes all in balance. Sympathetics: epinephrine high end, norepinephrine ditto, ACTH and A-steroids normal. Kirlian is hot and red."

"I'm concerned about sugar."

"One-thirty-five."

"Good. Think we need to worry about water?"

"I don't think so, not over thirteen and a half kilometers," said Po-xiang. "He's carrying 20% over. At this air temperature that should leave him at only minus five at the finish." He flipped sheets on the clipboard and held out a computer-generated table. Corcoran took it, traced a curve with his finger. He grunted and handed the clipboard back and looked down at Ayid.

"Hafouz," he said.

"Yes, sir?"

"Don't stop—I want you limber as a hot snake. Hafouz, I'm satisfied with your physical condition. We've got six specialists moni-

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toring you here and more back in Colorado. They all tell me that you're in the best shape, physically, that you can be without danger. But I'm worried about something else."

"High kicks," murmured Po-xiang. Ayid straightened up and began swinging his long legs skyward.

"I'm talking about your mind," said Corcoran. "Your will. Your mental preparation for this race. Are you determined to win this one, Ayid? Or is there some reservation I should know about?"

"I'm . . . I am determined to win, yes, sir," said Ayid.

"Then why did you refuse the supplement this morning?"

"Coach . . . I do want to win. But the M'zab . . . my people believe that Allah abhors all forms of intoxication. Those drugs you wish me to use . . . the Malikite school of rabbins has interpreted the Qu'uran to mean—"

"Excuse me," said the trainer. "I'm going in. Ayid, forty minutes till the start. Jog a lap if you want, but be in the ready room at the twenty-minute call." He walked away, leaving Ayid and Corcoran alone near the center of the field.

Corcoran looked around them at the stands. Already they were almost full. "I've heard you say that before," he said quietly. "I respect your beliefs, kid, but these are *not* the sort of drugs that make you high, as your elders seem to think. Not the ones that were in this morning's supplement. And you already know that *any* drug, any supplement, is legal under Mediational rules, since it's impossible to distinguish unfair advantage among sixty races."

"Do the Dhelians use these 'supplements,' coach?"

"Oh, probably not," said Corcoran. "They're such purists about their running sports they've lost sight of the main thing—to win. Damn it, kid, can't you see it's stupid not to take advantage of any loophole when the stakes are so big?"

"Stakes, sir?"

"Ah—yeah. What I mean is, Earth has spent millions to train you and get you here. Now, it's your right to refuse something you think unsafe. But don't you see that you owe Terra a duty . . . to take advantage of anything, *anything*, that could make the difference between winning and losing? That's the realistic attitude to take."

Ayid stared at his bare feet. He felt torn in two. He could see Corcoran's point, and he did, he felt, sincerely desire to win. Why wouldn't he? But to take such things . . . "I'm not sure, sir," he said miserably. "I don't like to . . . take advantage. . . ."

Corcoran glared, then shook his head. "I just don't get you, Hafouz. Any American kid would understand in a second. Well." He glanced

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at his watch. "Take a lap. Meeting in the ready room in ten minutes."

When the coach left Ayid stared at the ground for several seconds, then remembered the time and looked upward. The sun, little larger than a star but intensely blue-bright, was, he estimated, almost at its peak. To try to coordinate the five daily prayers with his home would have been impossible, so he had simply observed the rise and climb and set of this strange sun and prayed in accordance with it. Allah, after all, was everywhere. He knelt and turned his face to the east.

A few minutes later he rose, jogged two laps, and swung easily off the track as the twenty-minute call came over the loudspeakers. Jogging in to the ready room, he passed Aia Maior Laia, the Dheil who'd come in second the day before. Before he could think, he raised his hand to him in a casual runner's wave. The Dheil, nude as usual, smiled slightly and flipped his wrist in return. Ayid, embarrassed, ran by him. *Should I have done that?* he wondered.

He felt something different as he opened the door to the Earth team's ready room. Southren and Kwarafa were already there, working easily on two toning machines, sweat showing dark at the waists and armpits of their warmup suits. Corcoran and the other coaches, whom Ayid knew slightly, looked up from around a table. Po-xiang, face expressionless, nodded to him from his place at the trainer's desk. "Good, you're here," said Corcoran, not unkindly. "How do you feel, kid?"

And suddenly Ayid felt wonderful. A current of energy surged up from his lungs, a buoyant feeling that made him want to jump up to touch the ceiling. "I feel very good," he said, grinning widely.

"On to the toner, then. It's set for thirty per cent, just enough to keep you warm."

Ayid fitted himself into the toner, a spidery framework of tubular struts, stirrups, small servos. Po-xiang checked the straps and set it to gently flexing and kneading his legs, arms, and lower body as he pedaled against moderate opposition.

Why do I feel so good? he wondered. The lightness and joy increased from second to second. It felt like a taste of the Paradise the prophet promised, a taste such as he occasionally had on the track, an unexpected and omnipotent joy amid weary kilometers. But it had never happened before off the track. His nervousness was dissolving, drifting away as he gulped in great draughts of the warm air of the ready room.

"All right, listen up," Corcoran began. "After Run One we're trail-

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ing by four points. Not so much that we can't regain it in this race and go on to win.

"Terry, Ayid—this is your race. Especially yours, Southren. The 5000-standard is only three and a half kilometers longer than the 10,000-meter you've both run in the Olympics on Earth. Now remember, we want you both in front early. I think we found out yesterday that we can't count on retrieving a lead when we've got Maior or Tseil Laol in front of us."

Ayid was nodding, bobbing his head as the toner began to buck, loosening his torso and diaphragm. He felt silly and almost broke out laughing.

"To help you with your pacing, we'll be giving you individual times over the coach-runner circuits. On this track 5000 standards is ten complete laps. Let's aim for under 3 minutes 36 seconds per lap. It'll be tough, but you're the best old Terra's got."

"Too right," said Matthews, thumping the table. The Masai said nothing.

"Maintaining three-thirty-six a lap would give you a course time of about thirty-six minutes. We've checked Dhelian records and that's a damned good time. Neither Tseil Laol nor Aia Maior has done that well, although Laol has come close. Maybe you can't either. But it would be nice if you did—open with not only a victory, but a new record.

"So." Corcoran stared at the three runners. "You've all tested out 4.0, you're tanked up with water, sugars, your chemistry's been checked, and you've all had supplements—except, of course, Hafouz." He looked at Ayid questioningly.

"No, thank you, sir. I feel . . . wonderful! . . . even without it."

"Right." A picture flashed silently on the holo monitor near the ceiling. "There's the call. Let's get out there . . . and win!" The runners tumbled from the toners and jostled for the door. Corcoran exhaled and looked after them.

So much depends on them, he thought. So much. Would it help them to know what a victory could mean?

But it was not up to him to tell them. He got up. "Okay," he said to Matthews and the inscrutable PanAfric. "Let's get on up to the remotes. Wang—let's get this room aired out before some dummy tries to smoke and blows his face off."

At least we got some 0_2 into him, Corcoran was thinking as he rode the lifter to the top of the stands. *That may help. Though it would help a lot more if he were free of all that ancient brainwash.* Super-

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stitions and rituals the modern PanArabs had left behind almost a century before. . . .

He walked past the news and holo people into the suddenly quieter air of the soundproofed room where coaches, officials, and the accredited holo commentators overlooked the track from two hundred meters up. He stopped by the window, looking down the hill. To his right and below a blanket of multicolored humanity was spread across the hills. To his left the Dheils were seated, less colorful than the Terrans since unclothed, but equally numerous. Above them all the sun, blue and hot, glared down. Again today there was not a cloud in the sky. Corcoran remembered reading somewhere that Olympia had been a designed planet, that it had been moved to this star from a system doomed by its own sun's instability. Could clouds, he wondered idly, have been left out of the Dhelians' grand design?

He walked quickly to his own seat, to his own console, and sat down. The clocks, the lap computer, the telemetry, the one-way radio linking him to Hafouz, all were already on. Corcoran taped the mike to his throat and subvocalized as he caught sight of Ayid's thin figure far below.

"Hey, kid. Nod if you can hear me."

At the same time he pressed a switch and a holo cube leaped on, the camera locking automatically on Hafouz. His image, magnified twenty times, turned to look upwards, and nodded slightly.

"Admirably organized, Mr. Corcoran."

Corcoran turned at the interruption, then smiled and rose, extending a hand. "Denda Lai Anyo. Nice to see you. Ready to race?"

"You make me wonder." The Dhelian, taller and thinner than Corcoran, had a gentle lined face and streaks of silver in his flowing gold hair. He was, Corcoran knew, well over two hundred years old and had been as famous a runner as Tseil Laol in his youth. Now, like Corcoran, he was a coach. Laol's coach. The Dheil nodded at the panels in front of the American. "So much mechanism. Like piloting a spaceship, is it not?"

Corcoran kept his smile fixed, though the Dhelian's words touched a hidden spring of resentment in him. *They have to keep laughing at us,* he thought. *Well, after these games we'll be laughing too. Because we poor benighted mechanically-minded human beings with the anachronisms between our legs are going to win.* But aloud all he said was, "I wouldn't know. I don't suppose you use it."

"No. We see sport differently than your culture does, I think.

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Though in many other ways we may be more alike than we think at present."

"Could be," said Corcoran. *What is he getting at? Or is this just the polite pre-race conversation it appears to be?*

"Don't you feel that all this technique, this planning, takes away the . . . exhilaration?"

"Well, we're here to win," said Corcoran, still smiling. "We're not here for the 'exhilaration'."

"I see."

"And if you'll excuse me, the race is about to start."

"I understand," said the old Dheil, smiling too, but a bit sadly. "I hope that your methods result in the success you desire."

"Good luck to you too, sir." Corcoran shook hands again and then turned back to the panel angrily. *The patronizing old bastard,* he thought, and picked up the earphones to hear the holo network commentary.

"Hello from the UBC Sports Network. It's 14:28:11 Greenwich Mean Time back on Earth, and at this moment, here on Olympia, you're watching the runners prepare for the second race of the Mediational running events. A five thousand standard race—that's 13,500 meters. Favored in this event are the Dhelians, on their track, their distance, and with the psychological advantage of a four-point lead. Our UBC sportscomp has given us a prediction of how the race will go, based on the physiques and times of the six runners—"

The sportscomp began speaking in its annoyingly hyped-up manner (holo people always referred to it, for some obscure reason, as a 'cozelle'), but Corcoran's mind tuned it out as he watched the six runners take their marks. Like all the Dhelian events the 5000-standard started on the long straight of the infinity-shaped track and the first turn would be clockwise. Corcoran was too far away to see the results of the choice-ritual but smiled as he saw Ayid given the right hand lane for the start. That would put him on the inside for the first turn, making it necessary for anyone wanting to grab the lead to pass him on the outside. A small advantage . . . but races were often won with small advantages. The human commentator was speaking again and Corcoran heard:

". . . A nice turn of luck at the start favors Hafouz of Earth, but later things will even out. A lot can happen in thirteen thousand meters, a race that will take about thirty-six minutes to run. The weather today is fine, clear, and cloudless. Temperature is a crisp but comfortable 10.5°, with perhaps five kph of wind across the

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track. It's a fine day for running.

"The athletes are digging in. That white beam you see a few centimeters in front of them is the start beam. When it goes off a snapping sound is heard and the race begins. Our Dhelian sources say that at one time, long ago, that was a high-power laser beam. Tended to discourage false starts. . . when all the runners have passed it, it goes on again and becomes a lap marker, changing color each time until the last, when it's a deep pulsating ruby."

"Ready, kid? Get that ass down, they haven't given 'set' yet. Breathe deep, stay ahead on oxygen. You'll need it." Gerald Corcoran's eyes swept the telemetry, transmitted from a network of microimplants in Hafouz's major muscles and arteries. They looked good, trembling at levels that except for pulse rate would be panic reaction in a normal human but that in a long distance runner meant that he was ready to efficiently convert a sizeable percentage of his body weight to kinetic energy. The thin Algerian was at the fine peak of conditioning, youth, nutrition, and physiological readiness.

Corcoran hoped that he wanted to win as much as his coach did.

"Set!"

Snap! The beam winked out, and Corcoran half-rose in his chair as the six runners lunged forward. Kwarafa was ahead in the first five strides, then seemed to remember that he had a long way to go this time and throttled back. Corcoran zoomed the camera. Hafouz was showing his teeth—probably had his jaw clenched, a waste of energy that could also tighten his neck and back in time.

"Relax, kid," Corcoran transmitted.

Ayid felt for the tension and found it in his neck and jaw. Running was very easy, and he felt good. The first turn was ahead, and he went into it smoothly. Someone was at his left but he increased his speed enough to discourage them and they fell into step behind him. There was no one in front of him, and he felt joy and at the same time caution for there was a long way to run yet and much yet to happen.

The off-white beam winked as six bodies occulted it; second lap. Corcoran formed words in his throat as he stared at the clock. *"Three forty-one, kid. A little slow but a good first lap."* He checked the screen. *"You're leading Laol by two steps. Southren, Maior, and Sene Dior are in a cluster on his tail. Kwarafa's hanging back, looks like he'll be happy just to finish. Hold that pace, pick it up if you feel comfortable."*

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Comfortable . . . Corcoran bit at his lip as he watched the tiny figures rounding the turn again on the far side of the valley, passing in front of the Dhelian stands. His own gut was tight and he felt his palms sweating as they rested against the cool surface of the panel. Comfortable.

By now, he knew the first fresh burst had gone and Ayid and the others were running through the point where the body realizes what is happening and tries to rebel. He had known some of his runners to say that this and not the finish was the hardest part of a race, or at any rate the point where they felt closest to quitting, to jogging to a stop and saying shove it and walking off the track and out of running forever.

Thinking about it took him back to his own running days at USC. Running in the conditioned air under the big dome at Brown Field. Class of 2058. Yes, that had been a long time ago. Before the Chircurgi had come and then the Dhelians; before things had changed so much he sometimes felt out of place on Earth. His own AAU championship, then the try at the Olympics in '60 . . . in Beijing they had been, that year . . . how he had wanted to win. . . .

Strange, he thought, *how a loss can shape your entire life.* Before Beijing he'd expected to follow his parents into government service. Running had been only a game. But with the sense of his own decline had come a fierce determination. If he could not win himself then Gerald Corcoran would build winners. He had studied and worked single-mindedly to produce Klepner; then Abell, the 'Black Streak' from Richmond, who had astounded the pre-Contact world with an 8.9 hundred-meter dash, a record that still stood . . . probably always would, now that Terran sports were all switching to the Dhelian distances and rules.

Corcoran stared down at the track, not quite seeing it. With Contact, and with the invitation to compete in the Mediationals, he had been set. Corcoran, the UN had reasoned, had produced winners for the U.S. He would produce them still—but now, for Earth.

This, he knew, would be his last effort. The lancing pain that had stopped him suddenly three hundred yards from the finish line in Beijing came often now in the night when he lay sweating quietly. Nothing they could do, though some talked vaguely of a transplant. (When they saw his face they stopped. Gerald Corcoran Senior had died, blue, swollen, with a borrowed heart ticking like a bomb inside his stapled chest). No, this was his last contest, his last and his biggest. Corcoran, Ayid, Terra *had* to win.

Gerald Corcoran stared down at the track, eyes dilated, breathing

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fast and shallow.

They had to win.

"Third lap now—the beam is yellow. Unofficial elapsed time for the first fifteen hundred standards is ten minutes fifty-three point three seconds. Seven laps to go. Rounding the far turn at this moment, Hafouz of Terra leads, Aia Maior moved up to second not far behind and slowly gaining right now. Dhelia's best, the legendary Tseil Laol Laia, is running smoothly in a dead heat for third with Terry Southren. The two sprinters, Sene Dior and Kebe Kwarafa, are dropping back. Hard for them to keep up this pace lap after lap.

"And it will keep getting harder.

"You're watching the second race of the Mediational Games on Olympia, brought to you by the UBC Sports Network, holo at its best, Humans and Dhelians locked in a grueling five thousand standard run.

"By special arrangement we have the Dhelian, ah, chairperson for the team here, and would like to welcome him to UBC holo. Is it—Denda Lai Anyo, sir?"

"Denda Lai, or Lai, will do. The last name is an honorary, descriptive term applied to individuals after they've achieved some success. Such as Tseil Laol; the last element, 'Laia,' means simply 'the runner.' "

"I see. I was about to ask you about, ah, him?"

"To spare you difficulty, 'him' will do."

"Yes. Well, Laol *is* a fine runner, as we can see down on the track right now."

(CLOSE UP: Laol striding, head high, blue light glistening from sweat-wet planes of face)

"How old is he? Where is he from? Can you fill us in on some of his background, sir?"

(INSERT: databoard: fourth lap, elapsed time for leading runner 14:32:51)

(CUT TO: head of D.L., lit from left to emphasize age)

"I'll be happy to tell you about him, but some of the answers may not translate too well; there are many things for which your languages have no words as yet. Laol is 1730 time-standards old, which I think is about 73 Terran years. Is that correct?" (turns to off-camera) "Seventy-seven, my aide informs me. He has been running in competition since he was seventeen."

"Standards?"

"No, of course not. Years."

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"I see. The subject of Dhelian life-span is fascinating to us, but let's stay with Tseil Laol for the present. He's been running in events for sixty years, then? Fascinating. Is he a professional athlete?"

"Oh, no. We have no professional athletes."

"I see." A hint of anger in the interviewer's voice, but carefully masked. "Then what does he do?"

"He is a researcher," said Denda Lai.

"Researching . . . ?"

"Difficult to state in your terms. It's a field your science hasn't yet investigated. He studies certain aspects of movement—"

"Physics? We know quite a lot about motion." The dislike is now evident in the interviewer's voice. "Kinetics—"

"You misunderstand. It is biological movement, and its relation to what you call the 'mind.' We study certain lower races—"

"Such as humans?"

"No. I'm sorry. I meant species, not races. For example—"

"*Would* you call humans a lower race, sir?"

"I'm afraid you are deliberately misinterpreting my words. I see no reason to prolong this interview."

At the seventh lap Ayid heard a pounding behind him and to his right, and a moment later Tseil Laol was beside him and then had slipped into position just ahead as they entered the turn. It was quickly and neatly done, and Ayid had not had time to react.

"That lap was slow, kid. Three forty-four. He's not kicking, he's just keeping up the pace. Stay on his heels for now."

The tinny voice in his ear brought Corcoran and the rest of the world back with it. Three minutes forty-four seconds! He had thought he was running strong. Now he realized that he had slowed and that was how Laol had passed him. He lifted his head a fraction, feeling the wind carry cold sweat past his eyes, and ran harder, staying with the red-haired Dheil just ahead. It was always a little easier to follow; but later he would have to battle again for the lead.

His mind clicked from point to point in his body. Left foot going to sleep, as it always did near kilo nine. It would free up later. Knees and legs good, better than they had felt at the start. Tired, but good; hours on the toner at 100% were paying off. Back loose, gut fine now that he was into the race, shoulders and jaw too tight again. He relaxed them and reached out, pumping his arms, transmitting more of the sway of them with each stride to his shoulders to loosen them. This picked his pace up too, and he began to close on Laol, now three strides ahead.

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Lungs, good so far; but the deep ache was well advanced. He felt his running headache beginning, but that he ignored. He was sweating well, and as yet there was no chafing of his privates or thighs. Toes OK.

But he was getting tired. Seven and a half. *That's about 1400 meters a lap, or over ten thousand already,* he told himself, calculating through the sound of the crowd and the pounding of feet and the harsh rasp of breath. *The last time I got, at the end of the sixth lap, was 21:56. That was for 6 x 500, no, 6 x 1400, eighty-four hundred meters, okay. For each thousand meters I'm taking about 2 minutes, 36 seconds. . . . Is that right? Anyway it's way too slow.* No wonder Laol had passed him. Before he could act the orange-red beam whipped past him and he was into the eighth lap.

"Better," Corcoran's voice crackled. *"Three thirty nine. This is the lap to start to burn. Pull rods, Ayid! Let's pass this shmuck!"*

They moved into the turn. His lungs were hurting but he was ready to move. He was going to move, now, around the Dhelian. Now.

But he couldn't. At that last instant Maior had moved up, on his outside. The two Dhelians had him boxed in. The three of them swept along, fixed together as by invisible struts. Maior did not move by him but stayed at his elbow, blocking any move to retake the lead.

Was it deliberate? In the pain that rose in his head it was hard to think.

The Terran stands were a maelstrom; people below were standing, shouting, throwing things. A few left the lowest benches and ran on to the field. "Boxed in! They're boxing him!" said Corcoran, gripping the panel. "Damn them! Ayid—"

But on the zoomed holo he saw it happen. Saw the way Ayid's head turned to the side, just for a fraction of a second. The way his eyes met Maior's. And the way the Dhelian, sheering a meter to the outside, opened a gap for the Terran. If he could take it.

He did. Corcoran could hear even through the soundproofed walls how the ugly sounds from the crowd changed suddenly to cheering as the Algerian, arms flailing, moved slowly through the gap and drew abreast of Tseil Laol. And how it turned to surprise as Terry Southren, finding a burst of energy somewhere, moved up too to pace Aia Maior, stride for stride, centimeters apart.

The straight again. They pounded down it, holding their positions through it and through the next turn and then they passed the beam

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that flashed red and it was the

"Last lap! Laol and Hafouz are neck and neck for first. One step behind are Maior and Southren, with the two sprinters, Kwarafa and Dior, lagging far back; they've lost the pace, and now less than three hundred standards to go!" (CUT FROM: sportscaster to panning closeup of lead runners. Laol's face is calm, Ayid's flushed and fierce as they battle for the lead.) "And two hundred! Wait! *Southren is breaking loose!* This is his distance and it looks like he's been saving it up for a sprint right up to the beam! Will he try it on the turn—no—drops back—*here he comes!* The other runners can't match this—Laol has the inside on this turn—Southren going to the outside—that's Southren, Australia, 5000-meter world champion—into the last straight, the home stretch, *Southren's on Ayid and Maior and passing*—Kwarafa and Dior still falling back but grimly fighting for a fifth place—"

"Run, run, Ayid," murmured Corcoran. The transmitter was off; talk would only distract him now. He gripped the panel with white fingers. He could feel the pain coming but could not spare the time to reach for the injector he carried in his wallet. *One more race, I've got to see him through one more race.* "Run, run, run. Bring it home. Run, damn you, kid—"

"They're halfway down the straight—"

There was no pain. He had outrun it. It would catch up as soon as he crossed the beam but now he had no time for it. There was only himself and the track and another runner on either side. Someone was ahead. It didn't matter who. He was flying. It didn't matter even if he died afterward so long as he crossed that beam, flaring, pulsating ruby, that swept toward them as they ran locked together—

Corcoran stabbed the 'freeze' button and the image locked motionless in his cube—

"RESULTS, FIVE THOUSAND STANDARD RUN," said the announcing system, then paused. The crowd shifted, but was generally quiet, waiting. The speakers crackled twice as if someone had turned them on and then off again and then continued

"JUDGE'S CALL. FIRST PLACE: AIA MAIOR LAIA, WITH A TIME OF THIRTY-SIX MINUTES, SIXTEEN POINT OH TWO SECONDS. SECOND PLACE: TERRY SOUTHREN, THIRTY-SIX MINUTES, SEVENTEEN POINT TWO FOUR SECONDS. THIRD PLACE: A TIE, TSEIL LAOL LAIA AND AYID HAFOUZ, WITH TIMES OF THIRTY-SIX MINUTES, NINETEEN POINT FIVE FIVE SECONDS. FOURTH PLACE: KEBE KWARAFA, THIRTY-

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SEVEN MINUTES TWO POINT THREE SECONDS. FIFTH PLACE: SENE DIOR, THIRTY-SEVEN MINUTES ELEVEN POINT NINE NINE SECONDS."

"You have just heard the results of the five thousand standard race." The professionally excited tones of the UBC announcer squirted out among the stars. "And the score between Dheils and Earthmen is even.

"With one race—the longest—still to be run."

The quick night of Olympia had come, and with it, the end of his day. Ayid, pleasantly rotund with the high-carbohydrate meal Po-xiang had prepared, walked alone through the clicking night. Clicking, with the singing of thousands of . . . insects? . . . in the darkness of the low, deserted hills. Above them, to the eastward, glowed the reddish loom of the Port's lights. Ahead of him, over the track, a single reddish-white ball hung burning in midair. Beyond it he could see the windows of the small building where the Terran athletes slept.

He stopped on the soft combed grass and looked upward, smelling cinnamon. The stars were different, more crowded together then they had been above Al Jarzhireh. The night looked, smelled, even sounded different from a Terran night; and he was suddenly homesick for the silent desert of home.

Standing there, he gradually became aware that he was being watched. His eyes drifted slowly down from the stars and he found himself looking at a patch of darkness at the side of the trail. There, the strange Olympian insects were silent.

"Who is there?"

"Ayid?" A familiar voice, but one he did not immediately recognize.

"Yes. Who is that?"

Against the dark of the hills he could now make out, dimly, a human figure. It grew larger. Ayid wondered if there was a reason for his sudden desire to run. But he was a M'zab. . . .

" *'Issalaamu alleichum,"* said the shadow.

"Peace be upon you, the mercy of Allah, and his blessings," replied Ayid automatically in Arabic. His eyes widened as the dark suddenly resolved itself into the stocky figure of the PanAfrican sprinter. "Kebe. What are you doing out in the dark?"

"A late meal. And you?"

"The same."

Kwarafa extended a leg gingerly, then high-kicked, wincing.

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"Sore. I can't take these long races."

"An even longer one the day after tomorrow. Thank Allah they gave us a rest day."

"True. Ayid . . . can we talk together, you and I?"

"Talk? Well . . . sure. Let's go on back to the—"

"No. Not in the apartments. Nor the ready room. You and I, we are Africans, are we not? Let's sit here, on the grass. Under the sky."

Africans? Ayid glanced at the other's face, hidden by the night. True, they were both from the same continent . . . but he had not known the PanAfric was a Believer. This far from home that had to make a difference. "All right," he said.

They squatted in the cool grass under the stars. A moment passed. "What was it you wished to say?" said Ayid.

He heard the scratch of Kwarafa's finger in the dust. "Ayid. Brother. It is hard for me to say the thing that is in my heart."

His Arabic is good, thought Ayid. Classic, the kind the wandering marabouts took into West Africa long ago. "If it is a hard thing, says my tribe, it is best said quickly. Then it is out for all to see and judge of its rightness."

"But all may not see the truth. Nor *can* see it."

"What is this truth that demands such delicacy in its revelation?" Beyond his growing curiosity Ayid also discovered a simple pleasure just in speaking Arabic again. "Tell me of this truth, Kebe."

"That you must not win on the day after tomorrow. There, it is out, as short and quickly as you suggested."

Ayid felt unreal. The darkness hid the African's face from him but not his tone and from this he could tell that the other was not joking.

"Yes, that is short and direct. But I do not understand it. Why must I not win?"

"For the good of our people."

"The PanAfricans?"

"All Humans."

"I do not like this talk," said Ayid.

"Sit, brother, please. I will explain. I know how much I am asking; I too am a runner, though not as good as you. But sit quietly and listen and I will explain."

"Do so, then."

"First," Kwarafa stated, "you must not win because to do so would cause the *djinn* to become angry."

"Djinn?"

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"Devils. You must see them so too. Don't you?"

"I don't think they are devils. The Dheils? They are not like us but once one is over that one sees that they are not *djinn*. And why should they become angry?"

"Because they are proud. To lose to us here in their own sport, the first time we meet with them, would be intolerable."

"I don't believe that. But continue."

"Second, you must not win because it would make Humans feel that they are the equals of Dheils."

"Why would that be bad? They feel inferior now."

"Yes. And they should continue to feel that way."

"You surprise me," said Ayid. "You think that humans are inferior to—"

"No, no," said Kwarafa, sounding horrified. "I don't think so. We are different, yes, but just as good."

"Then I do not understand why it should be bad for us to feel that way."

"Because of the third reason. This you *must* understand because it is the most important. *You must not win because Earth must not join the Mediation.*"

Surprised before, Ayid was speechless now. Not join the Mediation! Not join that loose but glorious confederation of star-traveling races? Not join the godlike Dheils, the tricky but clever Chircurgi, the even more exotic races that Terrans had so far only heard of? "Why not?" he said, amazed.

The African scratched in the dirt again. "I had hoped that I would not have to explain to *you*," he murmured. "Your people, too, saw the whites come two centuries ago. With their guns and religions and then their roads and machines and medicines and politics. And how long did it take your people to regain themselves?"

"It's not the same. The Dhelians are not colonialists."

"Not quite. They don't want our land. But that's not what we PanAfrics fear, Ayid.

"You see, Earth's civilization was at a crossroads. In another century we would have reached the stars ourselves, without the Chircurgi. Instead, star travel was given to us—no, worse, *bartered* to us, a cheap set of beads for our gold and ivory. Do you not see how they regard us as savages?"

"That was not the fault of the Dheils."

"Have they acted to correct the wrong? No. So they share in it. And now worse things are happening. You've been insulated in your training, insulated by the Americans. But we PanAfrics see, we

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know what to look for. The Dheils are trying to give us new sciences, new technologies, whole new philosophies and social systems so far in advance of ours that they are like magic, like holo to a savage. We don't understand how they work, and we can't adapt to them.

"The consequence? Culture shock. A loss of faith in ourselves. Do you know what the suicide rate among scientists is now? Among priests and psychologists? It's frightening, Ayid. Before the knowledge of the Dheils our greatest minds are like medicine men before a locomotive. And if we join the Mediation, open ourselves to trade and visitation, it will be even worse—then it will be every human who is bewildered, lost, and doomed to live with his own inferiority before the gods from the stars. Earth is in great danger, Ayid, and her only defense is to *shut the Mediation out.*"

Ayid was silent.

"So do you see why you must lose, brother? If enough resentment exists, enough hate, the people will vote no to joining the Mediation. Your loss—your sacrifice—can help that happen."

"Is this your feeling, Kebe, or—"

"It's my government's feeling, but it's mine too. Africa has been through all of this before. Now we wish to mold our own lives for a time. Is that so unreasonable?" Kwarafa waited for a moment and then leaned forward to place a broad, surprisingly warm hand on Ayid's shoulder. "You need time to think. All right. But, brother, promise one thing—that you will consider well my words."

"I will do that."

"Good."

The 'grass' rustled and when Ayid looked up the African was gone. He squatted there, thinking, for perhaps half an hour as the insect drone faded into the final silence of the deep night, and then he rose to his feet and jogged slowly back to the apartments, and to his bed.

"Get the hopping hell off that track," said Corcoran.

"Coach, I am—"

"I don't give a rat's ass what you're doing. Get off that track. I said no workout today."

"I—"

"No workout." The American whirled and started away.

"Can't I just jog, sir?" Ayid called after him. Corcoran turned and glared, and then his face slowly relaxed into a half-smile.

"Okay. A little, no more than half an hour at 25%. But you've got to be fresh for tomorrow." A thought occurred to him and he motioned Ayid closer. "By the way—there are some rumors floating

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around concerning this last race tomorrow. Someone heard from someone else—that sort of thing. Have you heard anything?"

"Just what you told me, sir, that it's a thirty-mile course over rough country. What kind of rumors?"

"Well, don't waste time worrying about it—but supposedly there's more to the last event than an eighteen-thousand-standard cross-country run."

"What else could there be, coach?"

"That's the problem—I don't know, and can't find out. I called the judging staff, and all they'll say is that they can't discuss the final race in advance. That seems to be kosher; I looked it up in the rule book they passed out; but the nasty thing is that most of the judges for this event are Chircurgi, since they're non-runners and presumably neutral. But I just don't trust those shifty bastards."

"No," said Ayid.

"Well—jog if you want. Stop by the ready room when you're done."

"Yes, sir."

I wish they'd let us see the course, Corcoran was thinking as he watched Hafouz jog away. *But what the hell—we know the distance, and I'll be giving him times and monitoring him all the way. He'll do okay.* He was filled with a sudden cheerfulness, a presentiment of victory. Whistling, he headed for the coaches' dining room, pancakes, hamburger, and coffee on his mind.

Ayid looked over his shoulder as his coach walked away. He had been tempted to confide in Corcoran, to talk about Kwarafa's request . . . but he could not. Not to the American, with his blind need for victory at any price, his overbearing manner, the ready profanity that grated on a Believer's ears. A Kharidjite guarded his tongue, for Allah recorded every word. . . .

The thought of Allah brought the memory of a pair of eyes to him as he jogged slowly around the empty track. A pair of immense, calm, understanding eyes. Perhaps he could talk to the Dheil. Not with complete openness; but still, to talk would be good.

Where could he find Tseil Laol this time of day?

That's easy, he thought. He'll be readying himself for tomorrow's race. Easily, very easily, for everything must be saved and no bit of energy wasted. Forty-eight kilometers! There was no need of anything else. Maybe Corcoran's story about the rumors was only the American's way of keeping him nervous. He rounded another turn, and saw that his guess about Tseil Laol had been right. The tawny-haired Dheil was stretched out by the track, flexing his limbs in the same exercises the Terrans used. A moment later he rose and

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began swinging easily along the track, lifting his knees high and pumping his arms. Ayid did not wish to startle him, so he called as he came up from behind. "Tseil Laol!"

The Dheil turned his head, and once again Ayid was struck by the immensity of the golden eyes that seemed to see more than one wanted to reveal. "Ayid. Greetings. Come on up and run with me."

Ayid moved up. They ran easily together, floating, stretching their legs. Around them spread the bare hills, empty stands, deserted buildings, and the blue sun glared down. *Now that I'm with him, what do I ask him?* Ayid thought. He glanced sideways at the Dheil.

"You ran well yesterday, Ayid," said Tseil Laol.

"Ah . . . thank you. You ran well, too." They entered the straight leading past the empty Terran stands and Ayid searched nervously for Corcoran. He wasn't in sight.

"It is a fine day for running. Just for pleasure," said the Dheil.

"Yes," said Ayid miserably. He knew now that it had been a mistake to think that he could talk with the Dheil. The gulf was too great.

"You wished to ask me something?"

"What?"

"That is why you came after me. Isn't it?"

"Ah—"

"It's all right. You are doing nothing wrong. It was Earth's idea to keep us separated, even eating and sleeping apart, you know. Not ours."

"I didn't know that," said Ayid.

"You thought we Dheils wanted that? That we wanted even the audiences to be in separate stands? Of course not. The races of the Mediation mix at pleasure, subject to atmosphere and gravity preferences. These games are meant to promote friendship, not segregation and mistrust."

"Then why did you agree to it?"

"This is your race's first appearance among us. You are uncomfortable with other species. In time you will become more civilized, but for now we can afford to be accommodating."

In time you will become more civilized. Ayid heard Kwarafa's words inside his head: *Do you see how they regard us as savages?* "How do your people see us?" he blurted out.

The wide golden eyes, looking amused, swung to examine him, then moved back to the track. "Shall we pick up the pace a bit?"

"Why not?" said Ayid, recklessly. They moved faster, still together. He noted that the Dheil's strides were the same length as

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his and that they were moving in step, like soldiers double-timing.

"How do we see Humans? As a youthful race." Laol breathed for a few strides, then resumed, "One that has developed well in isolation, but which still has much immaturity. It was very unfortunate that you met the Chircurgi first. That has complicated the whole business."

"What business?"

"Of getting you into the Mediation. And then of helping you develop with as little permanent damage as possible."

Youthful. Immature. *Well, perhaps they have good reason for calling us that,* thought Ayid. *Though we have the wisdom of the Prophet to guide us.* That brought another question to his mind and he said, "Do you have a religion? A prophet?"

"We've had several hundred of both," said Laol, though without sarcasm or mockery.

"How old are the Dheils?"

"That's hard to say. Our recorded history goes back about six million Earth years. But even when those records began we had a star drive—a clumsy, undependable kind; many ships were lost—and we had long forgotten our home planet. Most think we came from somewhere in Quadrant Two, perhaps from a now-vanished planet called Dhela or Dhelia."

"Quadrant Two?"

"The Galaxy is shaped like a disc—that you know. We divide it into quadrants, radioids, distants, and longitudes in order to navigate." Laol stopped to breathe for a few meters, then resumed, "Quadrant Two is across the galactic center from Earth."

"I don't understand," said Ayid.

"That's all right. You will learn, and as you live longer you will learn how to learn more. When your eldest men have lived as long as the oldest Dheil you will be as wise as we. But that will take you many centuries."

Ayid sensed himself at the hard part. He decided to chance it; so far, the Dheil had seemed to hold nothing back. "Many centuries. But tell me, Tseil Laol, will there not be great suffering before we become like you?"

"Like us? Humans won't become like us. You'll become more than you are, but not like us. Unless, as some think, all races will someday outgrow the need for bodies. But to answer you, yes, there will be much suffering with change. Is it worth it? That has to be your people's decision when they vote whether or not to join us."

Ayid could think of nothing to say and so they ran on side by side

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for awhile.

"Ayid." It was Corcoran, in his head. *"Where are you? Report in to me at the ready room."*

"It's time for me to stop," he said to Laol. "It was good to run with you."

"And to talk. I've a little farther to run. See you tomorrow."

Ayid looked after him. The Dheil's figure grew slowly smaller, graceful, thin in the blue-white sun, until the Terran turned away.

"Ah, there you are, kid. Didn't go too far, did you?"

"Just a couple of laps, sir."

"Good. Eat a heavy lunch today." Corcoran leaned against the door of the ready room, where they were, for the moment, alone. "But wait a sec; they'll hold your meal. I want to talk about tomorrow."

Ayid nodded.

"Sit down." The American pushed the doors closed and looked at Ayid with an odd expression, half fond, half concerned. "It seems like I'm always asking this question, I know—but tell me again that you *do* want to win tomorrow."

Hide the confusion, Ayid thought. "Yes, sir, I do. Sure."

"I want to be sure. Because I'm going to ask you a favor."

Corcoran hesitated, then reached into a pocket and brought out a flat plastic package. He tore it open and shook out a small tubular capsule. He held it up. "I'm going to ask you to take this with you."

"Take it with me?"

"That's all."

"What is it?"

"Cocaine."

Ayid knew what that was. He had seen it sold furtively in the souks of the coastal cities, though he would never use it himself—nor would any M'zab. "Why? I don't wish pleasure."

"It's not for pleasure, kid. It's for running."

"I don't understand."

"Then listen. Coke is a pain killer. It's more: it's a stimulant. Incan messengers used it centuries ago to banish fatigue when they ran. Now, you've run in marathons before."

"Yes." Images of the prestigious Boston Marathon, which he had won the year before, twenty-six miles in an hour and forty-seven minutes, rose in his mind; time had blunted the memory, but he still remembered the agony of the finish. "They are very painful."

"Right. To run thirty miles, now—you can't do that unaided."

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"The Dhelians do."

"That's beside the point, Ayid. Look. You *have* to win tomorrow. And this could be just the thing to get you the last klick to win. And best of all, it's legal."

Have to, have to, Ayid was thinking. This was the price of being first, the end of the road he had begun to run long ago along the camel trails of Algeria. To take orders, to be treated like a tool by Kwarafa, by Corcoran, to *have to.* His head was lowered but something in him was beginning to revolt at last.

"Why do I have to?"

Corcoran stared at him. There was a moment of absolute silence as they stared at each other; then the older man's eyes slid aside. "All right," he said. "I suppose you have a right to know. So I'll tell you.

"Ayid—we are Dhelians."

At first he did not understand. Corcoran, glancing nervously at the door, explained about the discovery of the old ship, the subsequent history of Man as he diverged from the parent stock. "No one knows this yet, Ayid. Not the public, not the other runners, and especially not the Dhelians. And they must not be told. You know why?"

He thought for a moment, then had it. "To let us earn their respect first. So that they see us as equals, and not as . . ."

"Degenerates."

"Thank you." Hé had known the word in Arabic but not in English. "Thank you for telling me this, coach."

"Yeah. Well, keep it to yourself, kid."

"I will."

"Then, I guess—you can go on to lunch." He stepped away from the door, then paused. "Oh, yeah. The coke. I'll give it to you tomorrow. I've got a skin patch the injector will fit under."

"I can't take it."

Corcoran frowned. "Now wait. I just explained why you had to."

"No, sir. You explained why I had to win. Not why I had to take a drug to do it."

"But drugs are legal."

"They are legal by Mediational rules. But I am a Believer."

"Oh, Chr—sorry. Or whatever. Look, Hafouz, don't you think all that's a little irrelevant here? Do you have any idea how far we are from Mecca?"

"It does not matter how far we are from Mecca. Drunkenness is still forbidden. Drugs that steal the reason are still forbidden. To

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purchase a victory at that price is a sin. And for a M'zab sin is sin in Mecca or on Olympia. Sir."

Corcoran stared at the thin boy. He looked on the ragged edge of that insane self-control of his. *An American,* he said to himself again, *would understand. A Russian would understand. It's winning that counts, not abiding by some inane rules a bunch of senile old men in smelly robes made up a thousand years ago.*

"I don't understand you, Hafouz," he said.

"I do not understand myself," said the boy gravely. "That is why I live by the rules of my people."

"Go eat your lunch," said Corcoran. When the boy was gone he looked down at the object in his hand. *He'll take it,* he thought. *I'll find some way to make him take it. And he'll win.*

Then he thought of a way.

"Hello, Terry, Kebe," said Ayid, pulling out a chair to sit down. "Well, this is the day." The African smiled up at him; the Australian, engaged in his breakfast and looking glum, barely nodded.

Ayid looked out the window of the team dining room as he waited for his food. It was very early; and the sun, looking oddly yellow, had just cleared the rim of hills. Mecca . . . who knew where it lay? But one could face the sun. And he had, just before breakfast, kneeling on his prayer rug on the sparkling grass.

Po-xiang brought in two trays and left without speaking. Ayid dug in heartily; the race would not begin till early afternoon, and he was hungry. There was rice, a small cut of lamb, much fresh bread, all the coffee he liked, rich, thick, and powerful; orange juice; the flat date cakes he loved, a strange Chinese fish cake that the trainer had introduced him to. He had to force himself, toward the end, to stuff down the last few morsels on the second tray, but he knew that every calorie had been calculated in advance and he had to eat it all. Southren watched him unsmilingly over a half-eaten plate of kippers, waffles, oatmeal, and marmalade. "You have a good appetite," he said, when Ayid finally wiped his fingers with a napkin and settled back in his chair.

"You should eat, too, Terry. We'll need it all to run thirty miles."

"I've never run that far."

"Neither have I."

Kwarafa had already finished. "Listen to him," he said to Southren. "Eat it all."

Southren stared at Kwarafa. "You planning to run today?"

"Of course. Though I'm a sprinter, and I'll take it very slow—"

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"You seem to take all the races very slow."

Ayid glanced at Kwarafa. Anger clouded the African's face, but he said levelly, "I haven't done so well, no."

Southren stared at him for a moment more, then looked at Ayid. "I wish to bloody hell I knew what was going on around here," he said. "Something smells."

"I'm . . . not sure myself," said Ayid. He looked after Southren as the Australian left. "He seems angry."

Kwarafa shrugged. "Perhaps he's afraid of what will happen today. I've heard there may be something different about this event." He leaned forward and his dark eyes bored into Ayid. "You've thought about our conversation?" he said in Arabic.

"Yes."

"You'll do as we suggest?"

"I don't know. Other . . . something else has come to my attention. It may be best that I win, Kebe, for other reasons than those you know."

"But perhaps I do know. You mean the Dhelians—and us. Yes, the PanAfrican government knows about that. My coach told me."

Ayid nodded, relieved. Now there would be no more uncertainty. "Then you understand," he said.

"I understand that it's a lie," said Kwarafa. "There is no ship. We are not descended from Dhelians. It is merely propaganda, a trick to make sure you run to win."

"They would trick us like that? I don't believe it. Mr. Corcoran would not—"

"Trust me," said Kwarafa. "By the bowels of the Prophet I swear to you it is false. And as for your American coach—is there anything he would stop at to win?"

Ayid stood up, feeling dizzy. "I've got to think," he said, and left, not hearing Kwarafa's farewell.

Corcoran picked him up at eleven and walked him over to the coach's lounge. He would not be drawn into discussing the race. "We'll be in it soon enough," he said, showing Ayid into the meeting room, a low-ceilinged, homey place with deep chairs and even a bar in one corner. "I'll be on the circuit, giving you times and monitoring the medical stuff. I've got confidence in you—any Chircurgi tricks, we'll come through."

Ayid stopped just inside the doorway. A woman was waiting, tall, pale-skinned, yellow-haired, dressed in a severe green suit decorated only with the UN Mediational Relations Committee emblem.

"Ayid. Come in." She extended a cool hand. "This won't take long."

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He lowered his eyes under her icy-blue stare. "Coach Corcoran says you have an objection to performance-enhancing substances, based on the religious beliefs of your tribe. Is that essentially correct?"

"Uh . . . yes," he faltered. He always felt uncomfortable looking at a woman's naked face.

"Please read this." She held out a sheet of plastron.

It was short, concise, the sweeping Arabic characters looking out of place on a translight message form:

> Ayid Hafouz of the M'zab of Al Jarzhireh: Peace. The Council sitting in Ghardaia has granted you dispensation from such rules of the faithful as you deem necessary to excel in your final race. Bring honor to Earth, to PanArabia, and to your tribe.

He read it twice, then raised his eyes. "Do you have any further objections to following Mr. Corcoran's advice this afternoon?" the woman asked, taking back the form.

Wordless, he shook his head.

"Good," said Corcoran briskly. "In that case, let's go into warmup. We've about an hour to start time." He held out a small package, and Ayid took it numbly. "You can go on now. Po-xiang will be waiting in the ready room."

When the boy had left Corcoran and the woman exchanged looks. "I hated to do it," he began.

"You were right; they have instant respect for anything in writing. He didn't question its authenticity at all."

"But a lie?" Corcoran looked unhappy. "I've never lied to one of my runners before."

"Don't weaken now," said the woman. "Lies are sometimes necessary, for purposes of the greater good. Don't you agree?"

"I guess I just did," said Corcoran, reaching for his pocket as the pain became acute. "After all . . . it's a long way from Mecca."

What shall I do?

Shall I do my best to win? Or lose, on purpose? Perhaps Tseil Laol will leave me so far behind that it will be out of my hands.

As he walked toward the starting line, Ayid Hafouz hoped desperately that someone would decide for him.

On this fourth and last day of the Mediational running events, the crowds had far outstripped the seating capacities of the stands. Dark masses of Humans and Dheils covered the grassy areas of the hills. The sun sparkled on thousands of binoculars, cameras, per-

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sonal holos, making the whole vast bowl glitter. By Dhelian rules, they would see only the start and the finish of the race; the rest would be run cross-country, out of sight, though of course the judges would be watching the course through remote holos.

He felt his legs trembling, the large muscles of his thighs quivering. His bladder was tight, both with nervousness and the two liters of sweet fluid Po-xiang had poured into him. He reached the start line and bounced on his toes as the other runners fell into place around him. They exchanged short words— "Good luck" — "Good running." Kwarafa squeezed his shoulder and said in a low voice, "Remember, brother." Tseil Laol, in the lane farthest from Ayid for the start, did not look toward him but seemed involved in himself alone.

"RUNNERS FOR THE 18,000-STANDARD RACE, TAKE YOUR MARKS. THIS RACE WILL BE RUN ON SEPARATE COURSES MARKED BY GREEN SIGNALS. IN THE COURSE OF THE RACE THREE OBSTACLES OR TRIALS WILL BE PRESENTED INDIVIDUALLY TO EACH RUNNER."

Ayid felt a sudden thrill of excitement, not unmixed with fear. The rumors were right; this would involve something more than a forty-eight kilometer run, though Allah knew that alone would be bad enough. He hoped that he could face up to the 'obstacles,' whatever they were.

"—AND THE FIRST RUNNER TO NEGOTIATE ALL TRIALS AND FINISH THE COURSE WILL BE THE WINNER.

"SET!"

He crouched slightly. No need of a particularly fast start in a race this long. The outside world, Corcoran, Kwarafa, all his uncertainties and doubts, dropped away as he raised his head to watch the beam.

Snap. He uncoiled forward in an easy, fast, distance-eating lope. The six runners, roughly abreast, moved in a ragged line down the long straight. Beyond it a narrow lane had been roped off, leading over the hills to the northwest. In the distance, over the hills, a brilliant green light burned some meters in the air. The crowds, Dhelian on one side, Human on the other, reached out to touch the runners as they passed between them. Ayid hardly noticed the outstretched hands, hardly heard the surf-sound of applause, thinking to himself: *a slow start even in marathon terms. Well, we're all apprehensive, I suppose.*

The line began to stretch out as each runner settled into his own pace. Aia Maior settled in front of Ayid, who decided to let him set

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the pace for the first kilometer and see what his times were like. The grass was rougher than the smooth turf of the track, with the irregularities of a natural surface, and felt good to his toughened, bare feet. He reached the top of the low hill and followed Maior down the other side, toward a forest. As they descended he looked out over the terrain ahead. Fairly flat for as far as he could see; some mist far away on the horizon; low hills in the distance that disappeared behind strangely blue trees as they approached the woods line.

"Slow start," said Corcoran. *"But let's save it for now, stick with the Dheils. I'll feed you times. We're going to win this one, Ayid!"*

The green star, moving ahead of them, gleamed above a path leading in. Maior, now some twenty meters ahead, plunged after it. Ayid followed, hearing footsteps close behind him. The forest closed in around him, long flexible frondlike brachiations interlocking overhead, making the path they followed gloomy with a deep blue underwater light. The trail turned and twisted, and soon he lost sight of Maior.

There, the green signal—over a side path. Fronds whipped at him as he turned off the main trail. The footfalls behind him grew fainter and disappeared. He emerged onto a broad, bare, sand-surfaced road and went swinging along it.

He suddenly realized that he was alone. The sand of the road was unmarked by Maior's feet, and when he risked a glance back he saw that there was no one behind him. Was he lost? No, the green light still led him on. *We're running separate courses,* he thought. Probably rated and measured to make sure they all run the same distance. It made sense, in a way . . . but he had to admit to himself that he missed the presence of the others.

"One kilometer, kid. Three minutes fifteen. Slow but okay."

Though perfectly audible, Corcoran's voice seemed fainter. *It will improve,* Ayid thought, *when I come up on the hills beyond.*

And now he had to concentrate on running. So far to go, farther even than a marathon, those contests of pain. But he felt good, felt tremendous with omnipotent energy. *I'll do it,* he thought. *I'll finish, and I'll win, too.*

But *should* he?

He glanced at his left arm. The squarish lump of Ayid-colored tape in his armpit contained the injector. No, he decided, he would not think of that now, nor ponder the strange ruling of a Council that had never before evinced the slightest tendency to bend the age-old Kharidjite dogma.

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The sandy trail began to slant upward, and it grew lighter. Abruptly he left the forest behind and was headed uphill on a bare dirt path. He looked around as he ran, but save for the green spark ahead he was alone. The hill was low and the top quickly reached and he started down again. *Must be two kilos by now,* he thought, wondering where Corcoran was with his times. More forest ahead, but whitish shapes among the trees . . . what could those be?

The path now was straight, and Ayid allowed himself to increase speed. Now, early, was the time to stretch his legs. He tended to run faster in the last half of a marathon, and Corcoran had told him numberless times that a stronger run early would put him in a better position for the final kick to the finish.

The trail curved left at a tortured-looking wall of natural stone. Ayid leaned easily into the turn. The wall flashed by. Hollowed, convoluted, it bulged from the sandy ground in tall finlike ridges higher than the trees, with narrow channels between. Ayid was curious, but not curious enough to stop.

Another wall, to his left this time. The trail curved right and forked. He looked for the signal but it had gone on ahead of him, or so he thought, and he took the wider branch.

Thirty seconds later he was hopelessly lost. Only the bright sky, hemmed in by towering walls of the twisted rock, was familiar. And the green light, his guide, had disappeared.

Was this a test? Or was he simply lost? He jogged reluctantly to a stop and stared around. Three paths led off into the maze of rock. He jogged in place, wondering which to take. He examined the walls for marks. There were none. He bent to the ground but there were no footprints there but his own.

Which way?

Okay, let's think. We've been heading northwest ever since we left the track. Northwest? He was confused for a moment as he realized he might be in Olympia's southern hemisphere, then he shook his head in annoyance. Didn't matter what you *called* it. He looked up again and was relieved to see the blue sun. Praying by its position five times a day he had become thoroughly familiar with its daily course. If the correct direction continued to be northwest, then he should take the left-hand trail, he decided. That led to another crossroads, which he navigated in the same manner, and then to a long, narrow defile down which he loped at three-quarter speed, hoping. The canyon narrowed. Ahead of him he could see that it zigged sharply, then seemed to end. Ayid ran on, feeling rock brush his shoulders. He felt despair. He'd been wrong. There, ahead, the

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trail ended.

Or did it? He slowed. No, it was a corner. He turned it, scrambled up through a niche—and saw the trail widening ahead, sloping downward. And ahead of him, almost due northwest by the sun, shone the green star.

"Praise Allah, Who gives men minds to see Him," murmured Ayid. He sailed downward, letting out the muscles that had unconsciously become cramped in the rocky maze. He could, he realized, have been delayed there for hours. Except that he had remembered and reasoned. *The first problem,* he thought, *was one to be solved by the mind. What will the second one be?*

He lost the thread of that thought as the slope carried him into a wide valley. It was misty on its far side, though he caught some impression of a dark mass far away before the drifting white closed over it. Below and before him, drawing closer at each long heel-jarring downhill stride, was another forest.

But different from the first. An odd hard glitter ran across its surface as the wind moved its millions of leaves, making it look like a dark sea. As he followed the trail down into it he could make out

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individual trees at its edge, looking strangely pyramidal, or like men with legs astraddle. Another moment and he saw why: the trunks emerged from the ground at several points, uniting in a sort of flying-buttress way to form the main trunk. The trail led winding among them and soon he was leaping to clear the roots that occasionally encroached on the path.

The silence behind his ear was beginning to worry him. Where was Corcoran? Had something gone wrong? He would need his times to run at his best now that there were no other runners to pace himself against.

Silent. Yes, it was . . . no sound but the thud, thud of his own feet, the in-in-out rhythm of his breathing. It was cool in the shadows and with the sweating he was already doing it felt like a shower of cold water; good, but . . . it left him shivering. He had a sense of something vaguely wrong. He risked another look back. No, none of the other runners were visible.

His feet thudded in harsh syncopation. The trees seemed closer together now. Their foliage, reflective from above, was impenetrable from below, and the gloom swiftly deepened until he could barely make out the trail under his feet. At times he came close to colliding with the reaching roots of the trees.

There! He caught his breath even as he swerved abruptly to one side. There, he'd cleared it, but—*the tree had moved!*

No, he thought, *it couldn't have.* But he glanced back and saw its roots square astride the trail. He couldn't have run under it.

Worse than that, he felt it now, felt the air of menace that surrounded him in the lightless wood. He began to run in earnest, fear spurring him on, making his breath come ragged and his heart begin to pound. *No,* he thought, *I've got to keep to the pace. I can't exhaust myself now. Not with so many kilometers to go.* He forced himself to slow down.

Another tree moved suddenly, right in his path; and he ducked. This time it had been a branch. The movement had been slow, though; and he'd seen it coming as the trunk began to lean.

"They're too slow," he sobbed, twisting away from another blindly groping root. Ahead in the dimness the green light burned, blotted out from time to time by moving forms, limbs, slow deliberate trunks. He ran, weaving between shadows. Turn back? He couldn't—he'd never make it back through the alerted trees behind, and without the signal he might lose the path. But more than that he *had* to go forward, had to do it to finish the race. Even if the trees trapped him, caught him. And then . . . ? A smooth, hard,

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oddly warm limb poked into his side, knocking the breath from him, and with the nausea came sudden anger. They wouldn't stop him. With his hands he would tear them apart, these creaking, swaying, unnatural—

He struck straight into a solid trunk, rebounded, and fell. He lay there dazed and gasping. A crackling and swaying of branches came from above, and he rolled over and scrambled on hands and knees. Around him he felt the slow writhe of the roots. The anger was all he felt now; and when something coiled around him, he stamped and tore savagely and heard, somewhere above him, a harsh rasp of pain.

Then, quite suddenly, he was out and pounding all out down a dim forest lane, the green light gleaming far ahead. There were still trees to either side, but they were straight-trunked, and their only movement came from the wind. Ayid gradually regained control, slowed a little, and felt at his side as he ran. Bruised, but he couldn't feel anything broken. His mind? Not so simple. He was all right, he would finish the race, but he would never forget those long minutes of darkness and utter terror. *That, the second trial? Allah,* he thought, *they might have killed me.* He had no idea how he had escaped; all he could remember was the terrible anger.

He asked himself how far he had to go.

You've gone about fifteen kilometers, Ayid, he answered himself.

How do you know?

Just by the feel. As a runner learns to do.

Then we're a third of the way to the finish.

Yes, he said to himself. About a third. And one more trial yet to come.

The canopy of foliage above him opened gradually as he ran on, maintaining what he felt was about a 3:10 per kilometer pace. The sky became visible; and harsh blue light streamed down in long, glowing, laserlike rays. At last he came out of the trees entirely and climbed a series of short hills to a reddish, dry-looking plain. The white mist he had seen from far away now obscured his vision ahead, but he could see well for at least five hundred meters ahead, and he drove on relentlessly, stepping up his pace despite the pain from his bruised side. Kilometer after kilometer sped by on the dead level, without feature or tree or even a large rock to break the monotony. Ayid began to feel that he was on an endless treadmill of red plain and hard-packed trail. He kept glancing back. The fog was rolling in behind him, but there did seem to be a tiny black dot far back there. He couldn't even tell whether it was Human or Dhelian.

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In the monotony—he felt that he could crank out five-minute miles for hours on end, the nervous reaction after leaving the forest made him so buoyant—he began to think about Kwarafa, and what he had said about the Dhelian impact on Earth.

The PanAfrican was right. That was obvious; Tseil Laol had admitted it without qualification. There would be suffering, the Dheil had said. Hadn't even softened it by calling it friction or unpleasantness. Had said, suffering.

And the colonial analogy was sound. Holo was frowned on by the M'zab; but Ayid had seen, in the government schools, the old documentaries on the Wars of Liberation in the twentieth century, then the Moslem reaction that had in turn given way to the unified PanArab state. All of it violent, a history full of hatred and murder. And all of it due to the shock of facing and losing to a different, Western culture.

Was it worth it?

Dimly he suspected that if he had grown up a city dweller he might not think so. If he had grown up with holo, plenteous food, education, all the privileges of the PanArab upper classes. But he hadn't. He'd grown up a M'zab, ignorant and dirt-poor; and that made him appreciate the Western-derived medicine that had cured his sister once, the Western-derived engineering that had brought a meter-wide pipeline of fresh water in from the sea and given the M'zab, for the first time in their history, enough to eat. No, the European culture was not superior; but a wise nation could select what it wanted over the years and reject what was harmful. It had taken the Arabs two centuries to do it. But it could be done.

Which leaves you where, Ayid Hafouz?

It left him against Kwarafa. He knew the stocky African was sincere. He'd given up a sure first in the sprint to try to foul Southren. No athlete, and that Kebe Kwarafa was, could make a greater sacrifice. But Ayid did not agree with him. Algerians could not have stayed forever in the twelfth century, lopping off hands and dying of hunger and the plague. And now Earth could not immure herself in the twenty-first, not without turning inward and, finally, dying.

I will not lose this race if I can help it, Ayid thought. *Corcoran is right. I must win it and with Allah's help I will.*

And the M'zab, his tribe, with their stubborn denial of progress? Ayid decided he did not want to think about that just then.

He had been glancing upward for the last few minutes, puzzled by a huge shadow looming above him. The mist, thinning as he drove on, gradually allowed him to make out what it was.

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It was a mountain. It reared up from the plain like a strong man standing with arms outspread. It was so tall that he had to tilt his head back to see the top of it. For a moment he hoped that the trail might lead around it. Then he saw the green signal glimmering, far ahead, already a quarter of the way up the huge greenish-gray flank.

Not a mountain, Ayid. You can't take a mountain, my friend. Not after thirty kilometers and a scare and a poke in the *butuun*.

But he ignored himself. He was running well: better, probably, than he'd ever run before. The fear, the anger, the clear resolve now to win, combined to flood him with energy, breaking the fatigue he had begun to feel. A second wind.

He began the climb, slowing only a little at first, then more as the grade steepened.

It grew hotter as he climbed. The glare of the sun bounced up from the grayish sand surface of the trail, seeping into his face and melting into the sweaty heat of his long legs and arms. He felt the prickle of sweat break out again and pulled an arm across his forehead in mid-stride. Sweat was good—it cooled a runner; but it could be bad—could make him chafe at armpits and groin and thighs, rubbing the skin right off. So far, though, he felt all right.

The path narrowed and changed to a smooth rock surface. It seemed to have been sliced out of the living stone of the mountain, leading upward in a series of switchbacks. He couldn't imagine how the Chircurgis, or the Dheils, or whoever had planned the course, had done this to solid rock. The hardness of it jarred right up to his eyes with every step, and his right knee gave a warning pang. He came up off his heels, running with toes and calves. Still he could feel a shock in his legs at each stride.

It grew still hotter. The sun, high in the sky, flooded the narrow cut with blue-hot light. He shortened his stride, slowing down. He felt that he was barely inching up the mountain, like a fly climbing the side of the starship that had taken him outward from Earth. All that distance, all that energy . . . and here he was, straining to put one bare foot in front of the other. He almost smiled.

He turned at a switchback and the way up became steeper. He leaned into the slope, digging at the rock with his toes. The trail seemed to end just above at blue sky and he labored up to it gratefully but it was only another switchback. Far above him he glimpsed a green spark. He bent his head down and leaned stubbornly into the mountain.

His calves and thighs, fatigued already down on the plain, began to hurt in earnest. He swung his arms but that failed to move him

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any faster. His breathing, loud between rock walls, afforded no relief in this hot, thin air. A leaden feeling invaded his chest.

Another switchback. He turned grimly. How far? How high? He couldn't guess; the plain, white-shrouded below him, seemed as far away as if he were leaving the planet. And he hurt. He felt pain at the bottom of his chest, like a bar of heavy hot metal; in his mouth, parching, thick with ropy saliva; in his legs. Each step sent a shaft of pain upwards into his skull until the dull running headache ignited. His mind returned from his body to himself with data:

You won't make it. Have to stop, rest.

I'll make it.

You can't. Your knee is going.

Can't be much farther. Hold on. No isolated mountain can be very high.

On Earth, maybe. This is not Earth. In the Prophet's name let us stop and rest for a moment. There is no one behind.

There is someone behind. We saw him back on the plain, remember? Even now he is behind us on the mountain. Tseil Laol? Aia Maior? Or Southren? In any case it doesn't matter. We have to keep on. You shut up now and just help me run.

Another switchback, disappointing him terribly. Now he had to lift his foot at each step, and sometimes he slid, scraping skin from his toes and the soft side of his foot. He barely felt it. Up, up. His breath rasped. The trail suddenly became too steep to run straight and he was forced to plant his bruised feet sideways. The pace was agonizingly slow. With each step he had to pull himself up the mountain.

The red lights came on in his lungs and head and legs all at once. He was still moving, but it was almost a walk. Each step was a triumph of will. The pains in his legs and head and back were gone, lost in the screaming from his whole body. He was numb, leaden. But he still moved. Upward. Another turn ahead.

Blood supply to his stomach had been cut off long before; it had shut down, contracting like a fist, squeezing blood from itself to the straining muscles. Now his body began to cut off other demands. He blanked out for a moment but snapped back as he blundered against the face of the mountain. He took another step. The world was a mass of pain and he felt it all. He took another step. He took another step.

The grade ended and like a clown he tangled his legs and fell. He lay there hugging the cool and lovely horizontal as red-hot shafts of air sawed in and out of his lungs. After some time he was able

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to stagger up.

It was not a mountain after all; it was, or had been, a volcano. To his left lay the crater, a pit of grayish rock with trees lower down and between them the tantalizing sheen of water. To his right, to the east, lay all the land he had crossed. The mist still lay like lamb's wool over the red plain; far off he could see the sparkle of dark forest; beyond that, slightly indistinct in the shimmer of heat-haze, the low hills behind which lay the track. For a moment he saw a gleam in the sky even beyond that—a ship, lifting from Olympia Port on its way to Terra or to one of the Dhelian planets.

The thought of Terra brought him back to himself. He was Ayid Hafouz, running the last race of the Mediationals, and as far as he knew, he was in the lead. He must not lose it. He launched himself gingerly into the down-slope.

Much easier. The grade on this side was shallow, the trail drifting downward without need of switchbacks along a gentle ridge of harsh-looking volcanic rock that had been smoothed somehow and paved with a narrow trail of sand. He felt weak as water, and all his joints had stiffened in the brief stop, but he stretched his legs and tried to pick up speed on the straight sections. *I can't have more than twelve kilos left,* he thought. A good forty-five minutes' run. The mountain had to have been the third challenge. Purely physical. There should be nothing now but a straight run on in to the finish.

He wondered again why he hadn't heard from Corcoran. Out here, high up, he was almost in line-of-sight of the track. But there was only silence from behind his left ear . . . such silence that he could hear, transmitted through his bones, an ominous clicking noise from the faulty right knee.

Somewhat cooler now, a slight breeze in his face as he descended. He was panting. All the reserve water in his system was long gone. His mouth was dry and his head ached. He forced himself along the trail, letting gravity pull him down, flowing with it. When it reached level ground again he slowed and almost stopped, then shook himself and moved into a sort of dragging jog.

Ten more?

The trail was darker sand now, blending with an almost black, rough-looking sand that layered the plain on this side of the volcano. The slight breeze disappeared and soon he was running, panting, through a limpid shimmer of dry heat. The green star danced in the rippling air ahead of him, at times doubling and tripling itself, a mirage. He found it hard to keep his eyes on it. The horizon seemed to be spinning slowly around him. . . .

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He crumpled softly into the sand. It was burning hot and he wondered vaguely why it had not hurt his feet when he was running on it. He lay there for several minutes, then tried to get up. On the fifth or sixth try he succeeded and tottered forward again. Bright white trails, like slowly-moving falling stars, moved at the edges of his vision. On and on. He had no more idea of what his pace was, or of the passage of time. The blue-white sun had always been overhead, his tongue, swollen, had always filled his dry mouth. But ahead, slowly, the green hills began to rise above the horizon.

There . . . a dark line, between him and the hills, low on the ground. It expanded quickly as he ran on. It ran from his left to his right straight across the trail and as he came up to it a human figure stood up and suddenly reached out to grab at his legs and pull him down at the very edge. "Sorry," said Tseil Laol. "But I thought you were going to run right in."

Ayid lay flat, his chin over the edge, and looked down into the gorge. A mighty river must have run there once, perhaps even before the Dheils had wrenched Olympia from its doomed sun and spun it across space to here. But now it was almost dry, and fifty meters below them smooth boulders gleamed. He rolled over painfully and looked up at the tall Dheil.

Laol's face was bloody; a long cut had laid his scalp open across the forehead. He looked far past exhaustion; his fingertips were bloody; his feet were bruised blue and swollen. He tried to smile at Ayid's unspoken question. "Yes, about as bad as you look. This has not been an easy race."

"How—" It was hard to speak aloud. "How long have you been waiting here?"

"Not long. I saw you behind me, going up the mountain. You didn't look up."

"No," said Ayid. He looked into the gorge. "This is another trial?"

"It shouldn't be." Ayid's face hardened. "Not by the conventional rules. There were to be three, and they all have to be negotiable. This isn't. It's the Chircurgi. Their aim's clear enough—they want neither of us back before dark, to make both humanoid races look bad . . . especially us. Ayid, my poor Human friend, there are jealousies even within the Mediation."

Ayid sat up and examined the obstacle. A nearly straight cut through the black desert, its banks, humped and lined with water-rounded boulders larger than a man, dropped precipitously to the nearly-dry bed. Neither to north nor south could he see any way around, short of climbing the mountain again.

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"Couldn't we make a bridge?"

"Too far across. And I've looked up and down the banks. No trees, no vines, nothing but rock."

They looked at each other. Ayid waited, then saw that the Dhelian wanted him to speak first.

"I'll let you down," he said.

"Do you want to rest for a minute first?"

"Yes. Okay."

When he regained his breath they started down. Ayid, stretched out flat, locked his hand on the Dheil's fragile wrist as Tseil Laol wriggled over the edge. He felt himself being slowly dragged into the gorge as the other runner searched for a purchase. "Let go," said Laol at last. He opened his hand and the wrist disappeared over the edge.

"Are you all right?"

"Yes. Come on. Step onto my hands, then slide down; I'll break your fall."

He lost some skin from his upper arms, but found himself on a ledge about three meters down. He looked at Laol, who was panting. The Dhelian looked bad, but his eyes were calm. "You're next," he said, holding out his hand.

They worked their way downward from ledge to ledge, boulder to boulder. Tseil Laol opened the cut on his head again on a projecting point, sending blood pouring into his eyes. He wiped it out with the back of one hand and Ayid let him down and they were almost at the bottom and it was Ayid's turn to go down first. They rested for a few moments, breathing hard; then Ayid nodded. "Almost there."

Laol held out the hand, and Ayid took it and went over the edge. He dangled helplessly, pressed flat against the rock, and groped with his feet. Nothing . . . not a rock, not a ledge, not a crevice. He could see the riverbed but it was too far to drop and the rocks looked cruel down there. No, they couldn't get down here. His arm was being pulled out of joint. "Get me up," he called.

There was a pull on his arm, but he only came up a few centimeters. He felt the hand begin to slip from around his wrist. It felt sticky. The blood was making the Dheil's hand slip. "Laol, pull me up," he croaked, looking down into the gorge.

"Ayid—"

Something slipped. Ayid turned briefly in the air as he fell. He felt his right leg buckle outward at the knee, heard a terrible tearing crunch as ligament and cartilage gave way. Someone screamed, the sound echoing.

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"Ayid! Are you hurt? My hand slipped!"

He lay there, looking at his leg. It did not hurt at all. He looked up, saw the anxious look on Laol's face. "I don't know. Think I hurt my leg . . . move over to your right about five meters and you'll be able to hang by your hands and drop."

The Dheil let himself down cautiously, hanging by both arms, and let go. He dropped about two meters and hit, rolling. Ayid got up and put weight on the leg. Odd. That terrible sound and though it felt weak he could stand on it. Laol came over. "I'm sorry I dropped you. Are you all right?"

"I guess," said Ayid. A low trickle caught his ear and he and Laol both looked toward the center of the bed. A tiny stream of fluid meandered down it. He limped over to it and bent to sniff it. It was water. He picked up a handful and sniffed it, then drank. Water in the desert was one thing he knew. Sand grated in his teeth. "It is good to drink," he said. "Here. Let me wash that cut of yours out."

Tenderly he trickled the murky water over the Dheil's face. "That does not hurt?"

"One does not have to show it."

Ayid nodded, pleased. "So my tribe feels too."

"You're sure this water is safe?"

"Yes."

Laol sucked in a few mouthfuls and spat. Ayid followed suit and splashed some on his head and chest. It evaporated quickly, refreshingly cool.

"Shall we climb up now?" said Tseil Laol.

"Yes. Now."

There was one point on the way up—when Ayid was only a few meters from the top; and thought he saw a foothold that he could use alone—that he was tempted not to turn around and help the Dheil up. *For Earth, Ayid? Leave him here, and go on alone—for Earth?*

It took no time at all to make that decision. Ayid knelt, fixed his knees firmly, and lowered his shaking hand. "Come on up," he said.

They looked at each other at the top for a long moment. Ahead of them only the low hill lay between them and the track.

Without another word, they turned and began to run.

Now it is between us again, thought Ayid. *As it should be. The only way the race could end.*

The green beacon was poised now at the crown of the low hill. Beyond that, he knew, was the downhill, the final kilometer in full view of the stands. The holo cameras. The crowd. In view of Cor-

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coran. And as if his thought of him had called him back, he heard him again, faint, but rapidly growing stronger:

"Don't know if you can hear me but . . . blood sugar way below critical . . . lot of disturbance in blood chemistry . . . Po-xiang thinks you're injured . . . way overdue but heart rate shows you're still running . . . nobody else has finished yet . . . we're still cheering you on, kid."

It was only a gentle uphill, only a knoll, but the pain was worse than on the mountain. No feeling in his legs. The headache a red haze with darts of fire. The chafe in the groin. The sickening sound loud now in his right knee.

And Laol slowly, slowly drawing ahead.

The Dhelian, he saw, was running as hard as he could, but it was little better than a fast walk. He was only ten meters ahead. Couldn't he go faster? Couldn't he force himself to overtake?

They reached the crest, and the sight of the track and the stands burst over him. A tremendous roll of sound came drumming up the hill as they headed together down, down toward the green flicker that was now stationary a kilometer away.

"Kid!

"You made it. God—you look—what happened out there? Never mind. You made it. You stayed with him!"

Right, Coach, he thought.

"He's only a few meters ahead of you. You can catch him easy. Now's the time to kick it in!"

There's no kick left, coach. I don't even know if this knee, the grating sound louder now at each step, will get me to the finish.

"You're dead. I know you're dead beat, kid. You look bad. But you can catch him. Ayid, kid. The injector. Take it off."

He ran, without thought.

"Ayid, the injector!" Corcoran's voice, inside his head, pleading. It finally penetrated. *"Take it out!"*

Eyes on the finish beam, now redly visible under the green at the end of the straight, he obeyed. The tape came off his arm easily. The injector was hot from his skin, wet.

"Use it! Press it to your arm!"

Blind with pain, he saw only the finish. Not Laol's weaving form just ahead. Not the staring holos. Not even the blue-white sun. Only the finish. Only when he glanced down to guide the injector to his arm did he realize what it was. He threw it away weakly. It bounced once on the grass, rolled, and then he was by it. No more energy. There was no more in his entire body. He sagged.

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"Ayid, Ayid, you didn't—"

But he had, and now he could run no more. He stopped, stood uncertainly, and began to fold.

"Walk, anyway. Walk, damn you, you stupid Arab."

A last vague ripple of anger came to his rescue. He converted the fall to a stagger, the stagger to a hopping movement forward. Step at a time. Hatred for the red-faced American. Little faster. Stupid Arab. Knee hurts now. A hundred meters ahead he saw Tseil Laol break the beam, saw the Dhelian stands go wild. The red-haired runner raised an arm, and then fell. Ayid staggered on. Only a few now. The sun was red, not blue. Only a little.

He passed the beam, turned round once, and crumpled beside Tseil Laol. He sank down, inside himself, into the nothing behind his mind; and then he felt cold over his entire body and the sting of an injector on the side of his neck. He gasped and came up again, and strong arms were hoisting him up and forcing him to walk. By degrees, as the injection took hold, he regained control of his breathing and began to sob.

"Good," said a vaguely familiar Oriental face that wavered in front of him. "You stopped breathing there for a second. How do you feel?"

"Knee," he panted. "Rest . . . okay. See Laol." He gulped at something sweet held to his lips.

"He's got his own medics." A rough loud voice: Corcoran. "How is he?"

"He says okay, except for his knee." Po-xiang stooped down to manipulate the right leg. "It's shot, Jerry. He's torn the ligaments on the inside and the patella's displaced. I don't see how he made it except for the shock."

Ayid looked down, and felt fear. His thighs were bloody from the chafed groin, but the knee looked worse, swollen and bruised purple.

"Keep those holo people back," snapped Corcoran to someone. "He's hurt." He looked at Ayid for the first time. "Well. At least you finished. But throwing it away like that. . . ."

"Yes." Ayid rubbed sweat and involuntary tears from his face. Po-xiang's hands were gentle, but now the pain from the shattered knee was beginning to come through shock and adrenaline. "Guess I'm through. Done."

Corcoran didn't answer. He looked old suddenly, old and beaten. "Yeah," he said at last. "We're both through. This was the last one."

"Mr. Corcoran."

They looked up. It was Tseil Laol, a thin line of red showing on

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his forehead where the wound had been. His hair was wet. "Good race," said Corcoran after a moment.

Laol nodded, but he was looking at Ayid. "I understand that he is hurt."

"The knee's gone. He'll run again, given time, but never this far," said Po-xiang. "Are you all right?"

"Just tired. I came to see if I could help."

"We can take care of him," said Corcoran.

"Maybe there is one thing I can do," said Laol. He bent toward Ayid. "You won't be back to Olympia?"

"No." Ayid swallowed. A voice from his past, his father: A M'zab does not show emotion. Even at the moment of his greatest loss. "Except to watch. And I am poor . . . perhaps only by holo.

"But I will be back."

Laol straightened. He looked at Corcoran. "Denda Lai saw what he did, at the end. We know about drugs, of course. And how eager Earthmen are to win. He probably could have beaten me, but he chose to lose, because that was the way of the sport. The way of *dalanai*."

Corcoran narrowed his eyes.

"So—" Laol turned to face cameras, and newsmen, that had some-

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how magically appeared. "—I exercise an ancient Dhelian custom—and resign the victory to one that showed the greater *dal-anai*. Will you honor me, my brother, by accepting?"

"Ah—"

"He accepts," said Corcoran.

There was little to see outside the port once the blue-brown circle of Olympia, an opal on velvet, had dwindled to a distant light moving with parallax against the stars. The ship was gaining speed. Ayid leaned back and shifted his leg, propping the cast on a convenient table, and went back to his musing.

Had Tseil Laol known? He'd called him 'brother,' there at the end. But sexless, artificially reproduced, the word would be meaningless to Dheils. Laol knew English, true. But how had he understood the word? Which of its deep and enduring human connotations had he meant?

Did he, did the Dhelians, know about the relationship between their two races?

It was useless to think. He was out of the running now, in any sense of the term. But he would not be going back to the M'zab; he knew that. Corcoran could teach him coaching; there would be new runners coming up, inspired by the Mediational coverage. They would need his experience.

In a way, Ayid thought, it had all worked out well. Almost suspiciously well. If it had been done purposely it was very clever. Earth, proud now of both runners, showed every sign of approving the Mediation. From envy and suspicion, most Humans had turned to wholesale admiration and acceptance of the Dhelians, who in their turn were lavish with their praise of Human prowess. If it had all been planned, it couldn't have been done more neatly. Had Laol planned it? Had the Dheils?

Again, there was no answer. But in spite of the uncertainty he felt at peace. He had done his best in a fair race. He had—what was that old thing Corcoran liked to quote—oh, yes—

> If you can fill the unforgiving minute
> With sixty seconds' worth of distance, run;
> Yours is the Earth, and everything that's in it;
> And, what is more, you'll be a man, my Son.

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LETTERS

Dear Sir:

I see by reading Darrell Schweitzer's article in the December '79 issue of *IA'sfm* that I founded an "impure" Science Fiction club in Oakland in June 1928.

We had over twelve "impure" members to start. Among them were Clifton Amsbury, Lester Anderson, A. S. Bernal, Louis C. Smith, Ray and Margaret St. Clair, Fred Anger, Vincent Brown, and later Forrest J Ackerman. We had the imposing name of East Bay Scientific Association until Forrie joined. Then we changed the name to Golden Gate because Forrie lived in San Francisco. Since he was only twelve years old, his mother would not let him take the long trek across the Bay to East Oakland, by street car, ferry, red train and then again a street car. So we on occasion all went over to Forrie's Staple Street home.

We read, discussed, traded magazines, wrote letters to magazines and authors. We even put out a hectograph sheet each month for the members.

I know only too well that at that time East Coast fans considered any activity more than 100 miles from New York to be non-existent. But surely not today. As a matter of fact Sam Moskowitz in his *Immortal Storm* mentions Clifton Ansbury, Lester Anderson, and myself.

How can we prove we were PURE? Pure or impure, we were the first.

Sincerely,

Aubrey MacDermott
Larkspur, CA

He may have been referring to sexual immorality. How old were you all then?

—Isaac Asimov

Dear Sirs:

Glad to see you have made it through your first (monthly) year. I'm too busy to write to you about every issue, but finals are over now and in my spare time I thought I'd write to you about your December issue.

Good editorial! My rejection slips from this magazine are my fa-

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vorites (if it is possible to have favorites). I'll keep on trying!

Baird Searles's reviews are good, straight-forward explanations of the books. They are useful and I enjoy them.

"Written in the Sand" was a slightly-better-than-good story; very enjoyable. I can see a lot of other stories built on this one. Is Robert Chilson going to appear in *IA'sfm* again, soon?

I have to admit Martin Gardner stumped me with the code, but I had fun trying to figure it out. Susan Kovach's article was very interesting and easy to read and (especially) informative.

"The Web Dancer" was very good, and very readable. The ideas and imagination were very enjoyable. "Horse Laugh" was punny! Keep up the good puns. Darrell Schweitzer's article was good, giving me some information that I have wanted but been unable to find before.

"The Cow in the Cellar" was *very* good. I can see it happening in those endless tracts of clone homes in the suburbs of America. "Hear the Crash, Hear the Roar" was perfect. I know a couple of people who should read it (but probably wouldn't understand it).

"The Woman Who Loved the Centaur Pholus" was the best story in the issue. It was excellently written and immensely enjoyable reading. I was sorry when I came to the ending. Although it is a compact, single story that works beautifully as one piece, I think it cries out for a sequel or at least a story on the same theme. The whole idea of the story worked very well and it would be great if you could get Gene Wolfe to do another one, please!

As always, I enjoyed the letters. The art was excellent all the way through and I loved the cover. What happened to the poetry?

Overall, an excellent issue! Keep up the good work, and good luck in the years to come.

Sincerely,

Augustine Gauba
Box 884
Bisbee AZ 85603

Clearly your taste is exactly like ours. That speaks well for both of us, doesn't it?

—Isaac Asimov

Dear George:

New Jersey was not represented in the listing "On Science Fiction Clubs" by Darrell Schweitzer in the December 1979 issue of *IA'sfm*.

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The Eastern Science Fiction Association was organized December 9, 1945, has held meetings without a break since then, most in Newark, N.J., but the last two years the first Sunday of each month at the Wayne, N.J. Public Library. The list of credits of the association would require a standard-sized book, not the least of which were the many appearances of Isaac Asimov as a speaker and guest through its close to 35 years of existence. It is the third oldest continuously operating club involving science fiction in the United States and some of its meetings and guests in the past have been legendary.

The Bergen County Science Fiction Society, P.O. Box 65, Paramus NJ 07652 is presently the largest science fiction club in the state and has some of science fiction's most outstanding authors, editors, and artists at its meetings and publishes monthly *The Intergalactic Reporter*, a very readable publication of reviews and gossip.

While I'm at it I should clarify several other items out of focus in Schweitzer's piece. He mentions the Kalem club of which Lovecraft was a member and stated "coincidentally, all members' names began with K, L or M." This was true only for the first six months of the club's existence in 1926. It was founded by Rheinhart Kleiner, Frank Belknap Long and Everett McNeill in Brooklyn, the first letters of whose last names were K, L, and M. When H. P. Lovecraft, Samuel Lovemant, and James F. Morton joined, their names fitted in; but then the meetings moved to George Kirk's Chelsea Book Shop on West 15th Street near Ninth Avenue, New York City (Kirk and Lovemant had moved from Cleveland to New York). In addition to Kirk, whose name did fit, members included Vrest Orton, bibliographer and artist; Wilfred B. Talman, author and poet; Arthur Leeds, actor and author, so it can be seen that not all the last names met the letter criteria.

The informal group had some of its members involved in supernatural and fantasy fiction but were somewhat disdainful of science fiction. No account of the group appears before 1936, and that by its founder Rheinhart Kleiner. Science fiction fandom was not made aware of it until 1939 when Jack Speer discovered an offshoot of it in Washington, D.C. called the Outsider's Club.

A very bad error on Schweitzer's part is calling Germany's *Der Orchideengarten* a science fiction magazine. I own a complete set of it and it is a magazine of the supernatural, preceding *Weird Tales*, well produced and published twice a month at first then slowing down in its last period. It did produce on "Phantastik der Technik" issue which was predominantly science fiction, but it also produced

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several "Detektivgeschichten" (Detective Stories) issues including a new Sherlock Holmes story by one of the editors and, strangely, even an issue dedicated to helping the unfortunates in Siberia (I guess they qualified as characters in a true horror story). Let us not rewrite science fiction history from hearsay.

Sincerely yours,

Sam Moskowitz
Newark NJ

Sam, I don't know anyone who would dream of arguing with you on the facts of SF history.

—Isaac Asimov

Dear Mr. Scithers:

As I sit down to my (long unused) typewriter (next to the much used computer), I have decided to apply myself to a letter to the editor (the first in history for me).

With some degree of guilt I confess that I read *IA'sfm* via a devious method. My sister allows them into my custody after she has finished them. As with some others, I am heartened by the number of first-timers your magazine publishes. As a dyed-in-the-wool SF reader for many years, and a frustrated writer of same, I have come out of the closet to try my hand at a story. The out of the closet is no misnomer by the way. My typewriter and computer are in a converted closet in an upstairs bedroom. I therefore am requesting your requirements for a manuscript format. [*Done.*]

Having just read about half of the November issue, I can't help but wonder what has kept me from writing for so long. I want to write and I think I have the talent but I just can't seem to get ideas for stories. How does The Good Doctor do it? Maybe he gets his inspiration from a source not of this world? Of course I'm sure his scientific background is of no hindrance to that end either.

Anyway, I can restrain myself no longer and feel I must flex my auctorial muscles to someone and find out if I have wanted to extend myself on a lost cause or if I can really write science fiction. Bless you for the opportunity to try.

Sincerely

Norton Williams
San Jose CA

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Getting ideas? Easy! Just think and think and think and think and—

—Isaac Asimov

God rest ye merry, Gentlemen,

IA'sfm reaches this outpost in good time, and in good condition. November '79 issue, purchased at the Smoke Stack, date-stamped Oct. 25.

It was a pleasure to discover, in the September issue, that Barry Longyear writes for people like me, too. "Enemy Mine" very nearly made up in one swell foop for all those Momus stories I could never finish.

As for the November issue: My mind is still running clips from "In Spring A Lovelier Iris" (Ruth Berman), tapes from "The Raindrop's Role" (Kevin O'Donnell, Jr.), and stills from "Mountain Wings" (Sydney J. Van Scyoc). It will be another month or so before a front runner emerges.

It was disappointing to find good science and good writing wasted on yet another %$#&3@#!! story about writers writing stories. ("The Eternal Genesis," Milton Rothman). I get enough of that in real life; I don't need more when I read SF.

Which leads to the last paragraph. After two years of reading *IA'sfm*, delusion has set in, and I, too, fancy myself a potential writer of SF. I surrender. Please send me a copy of your Writer's Guide, SASE enclosed, and oblige. [*Done!*]

Jean Bullard
Port Alberni, B.C.

*Artistic incest is always with us. Think of all the movies about Hollywood; of all the portraitists who have done self-portraits. By the way, you misspelled %$#&3@#!!. There's a hyphen in it, and the second # should be an *.*

—Isaac Asimov

Dear Mr. Scithers:

I've just recently been reading *IA'sfm* on a regular basis, and I like what I see. The December issue is no exception, and I enjoyed all the stories except "Hear the Crash, Hear the Roar," which reminded me of a dirty roller-derby game. "The Cow in the Cellar" was a little spooky, because of its realistic comment on what human

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beings are capable of doing to each other in difficult times. I think I'll enjoy Pohl's "Like Unto the Locust" just as soon as the plot thickens enough for my small mind to comprehend what's going on.

I particularly enjoyed Dr. Asimov's editorial, and have to conclude that magazine editors are getting some hate-mail from struggling authors these days. When I was a teenager I built up a small collection of rejection slips and couldn't understand how such stupid people became editors. That was back in the days when dragons still kept people indoors at night, of course, and the only hint I got from rejection slips was that I should re-read the magazine for "slant." In preparation for increasing the size of my rejection slip collection, however, I have recently gone over some of the brilliant stories I wrote and have come to the painful conclusion that they are mostly junk. I couldn't see that at the time, of course, because I was too close to things.

I've been a physicist for fifteen years now, have published many research papers and waged war with countless numbers of referees and editors of professional journals. My experience has taught me the following truths: (1) if my paper is worth publishing, *some* journal is going to publish it. (2) If *no* journal will publish my paper, even after re-writing, then the work is defective and I should immediately begin work on a new project and try again. (3) Failures are a necessary part of professional experience and (4) the biggest joy in research is *doing* it, not publishing it.

On the other hand, if my next story is rejected I plan to kick and scream a lot.

Sincerely yours,

James C. Glass
Fargo ND

I agree with your philosophy completely and always feel that way about my rejections after the kicking and screaming.

—Isaac Asimov

Dear Editor:

I have subscribed to *IA'sfm* since it started, and it's an enjoyable magazine. However, I would like to see *more stories*. Looking over several issues, I found that at least one-third of the magazine is devoted to things other than stories.

For example: books—while it is nice to read about new SF books, can't each book just have a short paragraph rather than a full col-

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umn? In one issue, this feature was 6 pages long.

Another area that I feel could be cut back are the letters. Sure, it's nice to see your letter in print. Yes, it's helpful to the staff to know the reader's likes and dislikes, but please read them in the privacy of the editorial office. Every reader likes and dislikes various stories. I'd rather not read someone's opinion. Differences of opinion are what make horse races. If any reader wants to see his name in print in *IA'sfm*, let him write a story, not a letter. Please don't use 8 to 10 pages on letters, when you could print another story.

Even something like your recent article on how to start a science-fiction fan club. For those interested, you could have mentioned it in a boxed insert, requesting a SASE for those who wanted the information. Again—this space could have been used for a *story*.

I could go on with other examples, but you can see what I mean. The name of the magazine is *Isaac Asimov's Science Fiction Magazine*. Not letters, books, fan club information etc. but science fiction. This to me says stories.

For many years I have also subscribed to *Ellery Queen's Mystery Magazine*, also published by Davis publishers. Look over a copy or two—99% stories, a short book section, a couple of columns, but mostly stories.

IA'sfm is good, but it could be great. I will be looking forward to seeing some improvements in the future.

Yours truly,

Ann Zawistowski
Walpole MA

Oddly enough, that's the difference between mystery readers and science fiction readers. SF is not just stories, but a way of life, too.
—Isaac Asimov

Dear Editor:

I would greatly appreciate receiving writer's guidelines. Enclosed: SASE. [*Sent!*]

May I take this opportunity to offer my appreciation for your fine magazine. I've been reading SF since 1950 and especially enjoy Asimov. *I, Robot* may have been the very inspiration I needed to begin what now is a rather titanic collection/library.

Having supported my family of six for the past fifteen years as a writer and journalist, I can well appreciate the blood, sweat, and tears poured into a good novel; but I never really understood the

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terrific demands faced by an editor in gathering, editing, and producing a national magazine until I became such an editor about seven years ago. Despite the fact that I have had to deal with much more mundane material (automotive articles), I have had similar experiences with the constantly amazing ineptitude, gall, and overwhelming naivete of would-be freelancers.

Even the so-called professionals can be a decided pain in the posterior: egocentric, vain, unreliable, and paranoid at times. Therefore I plan to submit some short stories to you so that I, a practicing schizophrenic, fantasist, and part-time masochist, may in some small measure possibly give back some of what I receive. To quote Andy Kaufman, "Thank you vetty much."

Yours Tau Ceti,

Phillip E. Carpenter
Boise ID

P.S.—If you don't publish me, I'll sue.

George, who is a real editor, smiles benignly at your eloquence. I, who will never be anything but a writer, whatever I am called, say—what *terrific demands?*

—Isaac Asimov

Mr. Scithers:

You have done it!! Published a story to be continued in the next issue. The story "Like Unto The Locust" Part 1, in the December 1979 issue may be good or bad. I do not know as I will not start a story that is not complete in the book or magazine that I have in hand. Even as a subscriber I cannot be certain that the next issue will be available since delivery is at the mercy of the postal system.

There are several SF magazines on the newsstands that I do not buy because of continued stories.

This time you are forgiven; however if I see any trend toward continued or serialized stories I will have to allow my subscription to lapse at the next renewal date.

A long story may be good but it should be all in one issue. I would be satisfied if occasionally the only items in an issue were a good long story, an Asimov editorial or article, and a Ferdinand Feghoot.

Sincerely

David R. Kietzke
3057 50th Ave. S.W.
Seattle WA 98116

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It's a problem I will discuss in the June editorial.

—Isaac Asimov

Dear Asimov Gang,

Having felt the sting of rejection, I read the Good Doctor's Dec., '79 editorial with smoldering interest. Question #9—"*How should you react to a rejection?*"—uncovered old coals.

Rejection doesn't make me kick and scream, Good Doctor. I write nasty letters and turn disappointment to glee, though I haven't mailed them. Until now.

Some profiles I've pounded out:

George H. Scithers. —His positronic brain is badly in need of a tune-up by the estimable Susan Calvin. Despite his editorial workload, he finds time to spend his lunch break haunting park pathways, dressed only in a raincoat. A past victim once sent him a Revelation-of-Wonder card.

Shawna McCarthy. —Past headmistress for a P.L.O. tennis camp, she was fired after her overhead lob went off prematurely, blowing off a visiting dignitary's burnoose and circumcising his pate. Types with her canines.

Isaac Asimov. —This "Dean of Science Fiction," now in his dotage, is presently undergoing therapy in hopes he might again applaud himself with both hands. His doctors describe him as "double spaced." Kept in line by threatened sideburn deletions.

Before Philadelphia and New York go critical, let me hasten to say these were only brief flashes in the brain-pan.

One of my stories, apparently a "borderline case," came back after an unusually (these folks are *prompt*) long wait, with a critical analysis attached. It was the best encouragement ever received from any editorial offices—most of which deal with rejected writers *exclusively* through mass-printed slips. Only a sale could have meant more.

Cordially,

Vaughan K. Gibson
Jupiter FL

You were right the first time. Don't mail them.

—Isaac Asimov

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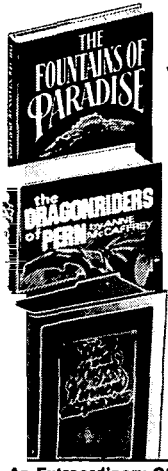

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